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2020 CENSUS PROGRAM MEMORANDUM SERIES: 2021.03

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MEMORANDUM FOR: The Record

From: Albert E. Fontenot, Jr. (signed February 12, 2021)
Associate Director, Decennial Census Programs

Subject: Documentation of Updates to the Non-ID Processing Operation

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This memorandum documents changes to the Non-ID Processing (NID) operation since the release of Version 2.0, NID Detailed Operational Plan (DOP) on June 25, 2018. These changes fall into two major categories: general changes to the Business Process Model (BPM) diagrams and changes because of the COVID-19 pandemic. Changes related to the COVID-19 pandemic have not been reflected on the BPM because they do not represent the ideal operational design. Both types of changes are summarized below.

The term confirmed geocode in this document refers to geocodes that meet at least one of the following criteria:

1) Matches to an "eligible for 2020 Census" housing unit, transitory unit, or group quarters address.
2) Latest post-census action applied to the Master Address File is positive for a 2020 Census operation.

Unconfirmed geocodes do not meet either of these criteria.

Changes to the BPM diagrams:

- Context Model, BPM page 3; DOP page 21, Figure 3:
  - Expanded what match status codes were considered resolved from automated matching. Initially matches to records with confirmed geocodes (match status = 1) were considered resolved. Based on the research of early matches to records with unconfirmed geocodes and concerns about clerical workloads, matches to records with unconfirmed geocodes (match status = 2) were also considered resolved and therefore would not need clerical processing.
  - Revised from what aspect of clerical processing the remaining match status codes flowed. Initially matches to records with unconfirmed geocodes (match status = 2) and matches to records where a geocode was automated (match status = 3) would require

verification in Office-Based Address Verification (OBAV). Unmatched and ungeocoded records (match status = 0), matches to records where a geocode was not obtained (match status = 4) and unmatched where a geocode was automated (match status = 5) were sent to manual matching and geocoding in an attempt to match and/or geocode. Because of changes to automated resolutions (described previously) and limited changes to unmatched, geocoded records in manual matching and geocoding, matches to records with unconfirmed geocodes were no longer sent to OBAV, and unmatched but geocoded records were sent to OBAV instead of manual matching and geocoding.
    - Decision 25, after activity 20, now sends return code = 1 or 2 (was only 1 before) to activity 70, return code = 3 or 5 (was 2 or 3 before) to activity 40, and return code = 0 or 4 (was 0, 4, or 5 before) to activity 30. Decision 35, after activity 30, redefines Yes as return code = 3 or 5 (was 2, 3, or 5 before) and No as return code = 0, 1, 2, or 4 (was 0, 1, or 4 before).
- 30.80 Perform Quality Control, BPM page 8; DOP page 36, Figure 18 (13-2.2.3 only):
    - In the previous version of the BPM is was not clear that Quality Control (QC) was performed for both manual matching and geocoding and OBAV.
    - Clarified that 30.80 applies to both 13-2.2.3 Perform Non-ID Quality Control and 13-2.3.1.1 Perform Non-ID Quality Control (new).
- 40 Perform Office-Based Address Validation (OBAV), page 11; DOP page 37, Figure 19 and page 38, Figure 20:
    - In previous version of the BPM details for selecting cases for QC was not included for OBAV.
    - Added decision 40.25 (Case Selected for QC?) and activity 30.80 (Perform Quality Control) prior to the existing End Subprocess. Decision 40.25 sends cases that were selected for QC (Yes) to activity 30.80 and cases that were not selected for QC (No) to End Subprocess.

COVID-19 Pandemic Related Changes:

- Removing "30.60 Contact the Respondent" from "30 Perform Manual Non-ID Processing": Because of a need to optimize the clerical process, the Non-ID Processing team evaluated the impact of phone calls on resolving records. Research showed that phone calls were not having a large enough impact to justify the additional time required because this process ultimately took time away from clerks working other records. The decision to remove this step was agreed to by the Non-ID Processing team in April 2020.

- Automating "40 Perform Office-Based Address Verification (OBAV)": Because of the need to emphasize manual matching and geocoding, the decision was made in August 2020 to automate Office-Based Address Verification (OBAV) and rely on Field Verification (FV) to verify any unmatched Non-ID cases. Based on research into the results of previously worked OBAV cases, it was determined that automated processing could account for records that matched to the address frame in previous processing. Also, the Nonresponse Followup (NRFU) operation was able to process an increased number of FV cases (unmatched). This allowed Non-ID Processing to rely less on clerical processing and instead shift the workload to NRFU without sacrificing accuracy.

The updated BPMs are posted to census.gov and linked to the 2020 Census Memo Series.

The 2020 Census Memorandum Series

The 2020 Census Memorandum Series documents significant decisions, actions, and accomplishments of the 2020 Census Program for the purpose of informing stakeholders, coordinating interdivisional efforts, and documenting important historical changes.

A memorandum generally will be added to this series for any decision or documentation that meets the following criteria:

1. A major program-level decision that will affect the overall design or have significant effect on 2020 Census operations or systems.

2. A major policy decision or change that will affect the overall design or significantly impact 2020 Census operations or systems.

3. A report that documents the research and testing for 2020 Census operations or systems.

Visit 2020 Census on Census.gov to access the Memorandum Series, the 2020 Census Operational Plan, and other information about preparations for the 2020 Census.

2020 Census Detailed Operational Plan for: 13. Non-ID Processing Operation (NID)

A New Design for the 21st Century

Issued: June 25, 2018
Version: v2.0
Prepared by: Decennial Census Management Division

United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
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Approvals

This NID Detailed Operational Plan has been reviewed and approved for use.

Electronically Signed	5/4/2018
Daniel M. Donello IPT Lead	Date Signed
Electronically Signed	5/18/2018
Ian Hull IPT Program Manager	Date Signed
Electronically Signed	6/8/2018
Deborah M. Stempowski Chief, Decennial Census Management Division	Date Signed

Document Change History

Revision #	Version	Date	Description
1-5	V1.0	August 24, 2016	Initial Release
6	V2.0	April 4, 2018	Updated DRAFT for Second Release • Removed Non-ID Response Validation Phase (now part of Response Processing Operation) • Updated BPM Figures to current version. • Updated IDEF0 to current version.

Note: Edit the fields below to update the Document Version, Date and Status in the Page Footers throughout the document.

Document Footer Information Control Table

Field Name	Version, Date and Status
DocVersion:	Version V2.0
DocDate:	June 25, 2018
DocStatus:	Final

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1. Document Purpose

The 2020 Census Detailed Operational Plan for the Non-ID Processing operation (NID) is intended for use by U.S. Census Bureau managers, staff, contractors, and other internal and external stakeholders working on the 2020 Census. The document presents the detailed operational design for the 2020 Census NID Operation and includes a summary of the operational processes involved, their inputs, outputs, controls, and the basic mechanisms employed to conduct the operational work.

Anticipated uses of this document include the following:

- Communication—Documents operational design details for internal and external stakeholders.
- Planning—Documents planning assumptions and key milestones.
- Staffing—Documents staffing needs and strategies.
- Design—Describes operations and flows, which inform design of IT systems, manual processes, and training.
- Development—Identifies business rules and required capabilities to be developed.
- Testing—Provides a basis for developing integrated test plans for IT systems and processes.

This document complements the 2020 Census Operational Plan, which presents the 2020 Census operational design and covers all operations required to execute the 2020 Census, starting with precensus address and geographic feature updates and ending once census data products are disseminated and coverage and quality are measured.

2. Operational Overview

2.1 Operation Purpose

The Non-ID Processing operation is focused on making it easy for people to respond anytime, anywhere to increase self-response rates. The operation accomplishes this by:

- Providing response options that do not require a unique Census identification (ID).
- Maximizing real-time matching of NID respondent addresses to the census living quarters (LQ) address inventory.
- Accurately assigning nonmatching addresses to basic collection units (BCUs) and attempting to verify them in a clerical operation.

The 2020 Census respondents will have the opportunity to fill out their census questionnaire online using their preassigned Census ID. In addition, respondents will be given the option of going to the 2020 Census website and completing the questionnaire without an ID. These cases without an ID are commonly referred to as "Non-ID Cases."

The process of comparing these Non-ID Cases with address records contained in the Master Address File (MAF)/Topologically Integrated Geographic Encoding and Referencing (TIGER) database (MTdb) to determine whether they match existing address records and/or assigning census geographic codes to these cases is known as "Non-ID Processing."

In order to determine an outcome as quickly as possible, Non-ID Processing will first attempt to use real-time automated processing to link (match) Non-ID addresses to an existing MTdb record, or in the case of a nonmatch, otherwise determine the correct physical location and associated geographic codes. In addition, the operation will use administrative records data to supplement respondent-provided addresses in an automated process that occurs after a Non-ID response is received, as well as implement tools and techniques for performing interactive matching and geocoding when automated processing is unable to resolve a Non-ID case. The operation also leverages office-based solutions to reduce the field verification[1] workload for the nonmatched/geocoded Non-ID cases from automated and interactive matching and geocoding.

2.2 Background

During the 2010 Census enumeration for stateside (the 50 states and the District of Columbia) and Puerto Rico, as well as during previous censuses, the majority of people self-responded by

[1] Field verification existed in Census 2000 and the 2010 Census to account for Non-ID responses that were unable to be matched to the MAF, or matched to a previously ungeocoded record. In these instances, this was the mechanism to ensure the respondent's address/living quarters actually exists and is physically located and associated with the correct geographic codes assigned to it.

questionnaires delivered to their LQ by mail or hand-delivered by U.S. Census Bureau field staff. These questionnaires contained a Census ID that linked the questionnaire to the address of the LQ. While the vast majority of responses in the 2010 Census fell into the category of responses containing a Census ID, there were a number of individuals who responded via methods (such as submitting a "Be Counted" form) resulting in a response lacking a preassigned Census ID.

The ultimate goal of Non-ID Processing is to determine if the addresses submitted by respondents can be associated with existing MTdb records in the census universe, or if an address not matched to a MTdb record can be subsequently verified, assigned a new Census ID, geocoded and added to the census universe. It is critical the addresses are associated with geographic codes in the correct physical location because the census data products rely on the accuracy of these geographic codes.

2.3 Design Overview

The sections below present the high-level design for the Non-ID Processing operation (NID). Please refer to the 2020 Census Operational Plan for a complete inventory of design decisions for all 2020 Census operations.

2.3.1 High-Level Operational Design

The design of the NID Operation for the 2020 Census includes two major operational activity areas:

- Real-Time Non-ID Processing Phase
- Post Real-Time Non-ID Processing Phase

Each of these major activity areas is summarized below. Together, the activities in these two areas represent the complete set of work that needs to be performed to conduct this operation. The primary goal of Non-ID Processing is matching addresses, so if a match does not occur in the initial phase, another attempt is made in the subsequent phase. Assigning only a BCU geocode is acceptable only after all opportunities to match have been exhausted and requires a further step of address verification.

Real-Time Non-ID Processing Phase

The Real-Time Non-ID Processing (RTNP) phase will attempt to resolve Non-ID cases submitted by the respondent using matching and geocoding services at the time of submission. This phase also enables a feedback loop to the respondent, which is utilized to increase the rate of successful matching and geocoding during the response.

Post Real-Time Non-ID Processing Phase

The Post Real-Time Non-ID Processing phase will attempt to resolve Non-ID cases submitted by the respondent that are not resolved in the Real-Time Non-ID Processing phase. There are two kinds of Non-ID processing that are employed in the Post Real-Time Non-ID processing phase:

- ***Asynchronous Non-ID Processing***

  The first kind of processing that is employed is an automated Non-ID method that is referred to as "Asynchronous Non-ID Processing." This method uses the same matching and geocoding services as Real-Time Non-ID Processing but also includes the use of a composite of federal administrative records and third-party data to obtain corrected or missing address data in order to improve the match/geocode rate.

- ***Clerical Non-ID Processing***

  The second kind of processing uses what is referred to as "Clerical Non-ID Processing" and consists of "Manual Matching and Geocoding" and "Office-Based Address Verification" (OBAV). Manual Matching and Geocoding attempts to obtain an address match and/or geocode for Non-ID address records not resolved through automated Non-ID Processing (both Real-Time and Asynchronous). OBAV attempts to confirm the existence and BCU assignment of records geocoded during previous Non-ID Processing (Real-Time, Asynchronous, and Manual Matching and Geocoding) but not resolved. Clerical work will be achieved using available geographic reference materials and an interactive matching and geocoding application in an office-based operation.

The full hierarchy of activities for the NID Operation is provided in Appendix C in the form of an Activity Tree. In the Activity Tree, each major operational activity area listed above is numbered and then decomposed into a numbered set of subactivities, some of which are further decomposed into more detailed numbered subactivities or steps.

For a full description of the operational subactivities that comprise the NID Operation, see the Detailed Process Description discussions in Section 3 below.

2.3.2 NID Operational Context

The NID Operational activities described above are conducted within the context of other 2020 Census operations and other programs or data sources that are external to the 2020 Census Program. One way to depict an operational context is by using a "Context Diagram," which shows the boundary of the operational process, the operational activities it contains, and the information exchanged with its neighbor operations (or other entities) as well as the resources (mechanisms) needed to conduct the operational work.

Figure 1 is a top-level context diagram for the NID Operation represented as an Integrated Definition, Level 0 (IDEF0) model. An IDEF0 model of a process (or operation) shows the Inputs, Controls, Outputs, and Mechanisms of the process. These IDEF0 model elements are summarized below and described further in the sections that follow.

The yellow box in the center of the IDEF0 model lists the major operational activity areas for the operation, numbered as given in the NID Operation Activity Tree in Appendix C. Specific Information Exchanges (IE) are shown in different colored boxes to represent the Inputs (green boxes on left side), Outputs (orange boxes on right side), Controls (purple boxes on top), and Mechanisms (blue boxes on the bottom). Boxes to the left of the Inputs indicate the *Provider* of the inputs to the operation (typically another 2020 Census operation or an external source). The Provider of the Controls is noted in the box itself. Boxes to the right of the Outputs indicate the *Receiver* of the outputs (typically another 2020 Census operation or external entity). Each Information Exchange has a name and a unique number for identification purposes.

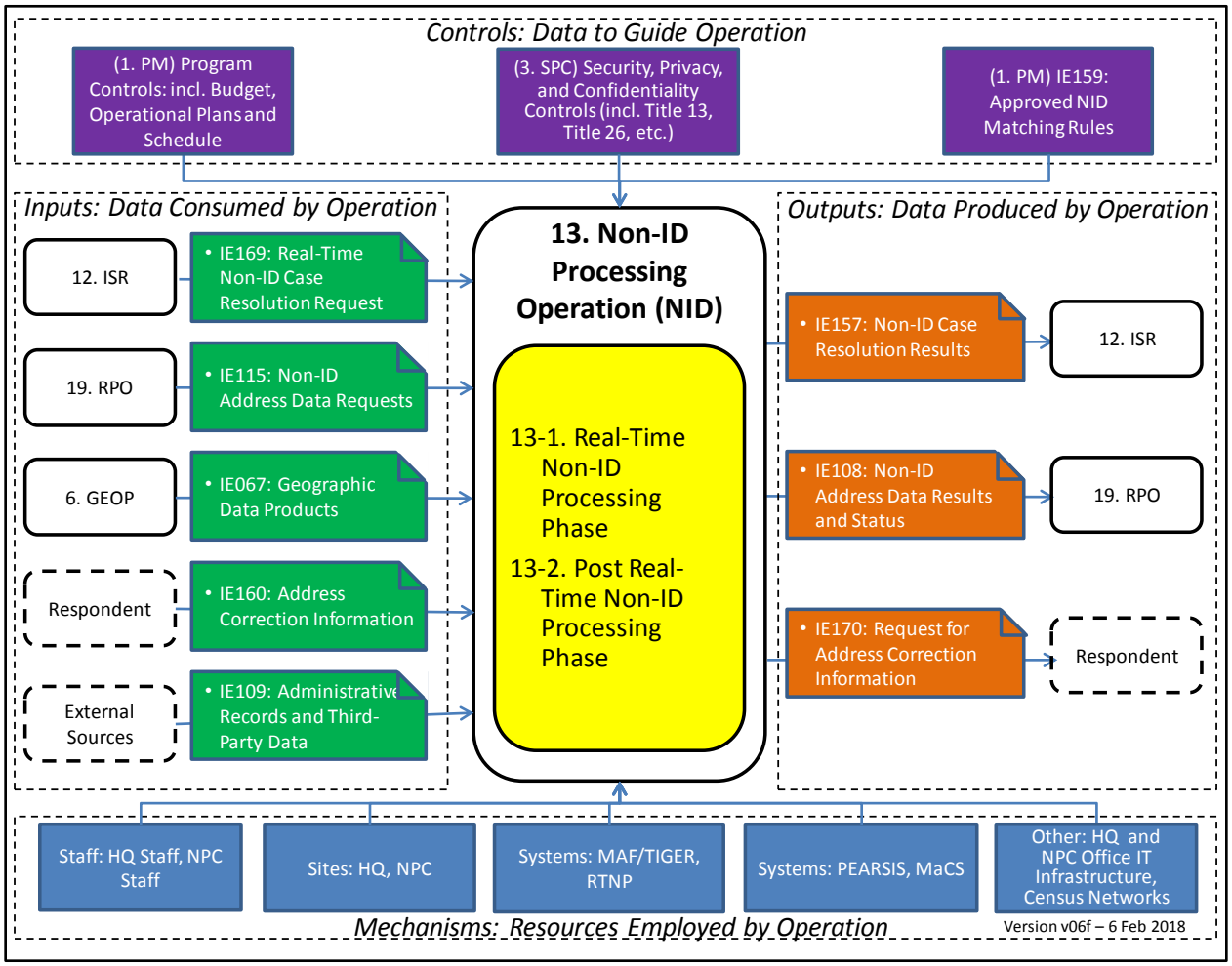

Figure 1: Non-ID Processing Operation (NID) Context Diagram

For NID, the input data consists of Real-Time Non-ID case resolution requests from Internet Self-Response (ISR), Non-ID address data requests from the Response Processing Operation (RPO), and address correction information from the respondent as well as administrative records and third-party data for use in Non-ID related matching activities.

The control data which is used to guide the NID activities includes Program Controls and Security Controls as well as approved matching rules.

The output data from NID consists of Non-ID case resolution results and Non-ID address collection specifications to ISR, Non-ID address data results and status to RPO, and request for address correction information to the respondent.

The mechanisms (i.e. physical resources) employed during Non-ID Processing include staff (at headquarters (HQ) and the National Processing Center (NPC)), infrastructure sites (HQ and NPC), and Systems (MAF/TIGER, RTNP and Production Environment for Administrative Record Staging, Integration and Storage (PEARSIS). Other mechanisms employed include HQ and NPC IT infrastructure and Census Bureau networks.

For detailed descriptions of the Inputs, Controls, Outputs, and Mechanisms used by the NID Operation, see the sections that follow.

2.3.2.1 NID Operational Inputs

Inputs are the data that are consumed by the operation. The inputs define the amount of operational work that needs to be performed.

Table 1 lists the inputs to the NID Operation.

Table 1: NID Operational Inputs

Provider	Information Exchange	Description
12. Internet Self-Response Operation (ISR)	IE169: Real-Time Non-ID Case Resolution Request	Non-ID address from a respondent or from a Census Questionnaire Assistance (CQA) agent using an ISR application.
19. Response Processing Operation (RPO)	IE115: Non-ID Address Data Requests	Non-ID address from Response Processing. These requests represent Non-ID addresses for which an address match was not obtained during Real-Time Non-ID Processing.

Provider	Information Exchange	Description
6. Geographic Programs Operation (GEOP)	IE067: Geographic Data Products	The geographic products that will be needed to conduct the specific 2020 Census Operations work.
Respondent	IE160: Address Correction Information	Corrected address from respondent.
External Sources	IE109: Administrative Records and Third-Party Data	Administrative records data to be used by PEARSIS for Non-ID related matching activities.

2.3.2.2 NID Operational Controls

Controls are the data that guide the behavior of the operation. They are not consumed by the operation, but rather they provide guidance, models, limits, criteria, cutoff dates, or other information that controls the way in which the operational work is performed.

Table 2 lists the controls for the NID Operation.

Table 2: NID Operational Controls

Provider	Information Exchange	Description
1. Program Management Operation (PM)	Program Controls	Program Control information including: • Budgets. • Operational Plans and Schedule.
3. Security, Privacy, and Confidentiality Operation (SPC)	Security, Privacy, and Confidentiality Controls	Laws, policies, regulations, and guidelines related to physical security, IT security, data security and privacy and confidentiality impacts, analyses, and processes. These include but are not limited to Title 13, Title 26, and other laws and policies related to protection of personally identifiable information.

Provider	Information Exchange	Description
1. Program Management Operation (PM)	IE159: Approved NID Matching Rules	Approved matching rules that will be used during Non-ID Processing.

2.3.2.3 NID Operational Outputs

Outputs are the data produced by the operation. The outputs constitute the results of operational work that has been performed. Outputs produced may be used as inputs or controls to other operations.

Table 3 lists the outputs from the NID Operation.

Table 3: NID Operational Outputs

Consumer	Information Exchange	Description
12. Internet Self-Response Operation (ISR)	IE157: Non-ID Case Resolution Results	Non-ID matching and geocoding results from RTNP.
19. Response Processing Operation (RPO)	IE108: Non-ID Address Data Results and Status	Non-ID matching and geocoding results from Post Real-time Asynchronous and Clerical Non-ID processing.
Respondent	IE170: Request for Address Correction Information	Request for feedback from respondent on completeness/accuracy of their submitted address.

2.3.2.4 NID Operational Mechanisms

Mechanisms are the resources (people, places, and things) that are used to perform the operational processes. They include Staff Resources, Infrastructure Sites, Systems, and other Technology Infrastructure.

Staff Resources

Table 4 identifies the Staff Resources employed for the NID Operation.

Table 4: Staff Resources Used Within NID Operational Activities

Staff Resources	Description/Role
HQ Staff	HQ staff to manage overall NID Operation and coordinate activities with NPC for the clerical operation. HQ staff to conduct analysis work.
NPC Staff	NPC staff to manage and conduct NID Operation clerical work.

Infrastructure Sites

Table 5 identifies the Infrastructure Sites employed for the NID Operation.

Table 5: Infrastructure Sites for NID Operational Activities

Infrastructure Site	Description/Role
HQ	HQ sites for office work
NPC	National Processing Center site used for clerical work

Systems and other Technology Infrastructure

Table 6 identifies the Systems employed for the NID Operation.

Table 6: Systems Used Within NID Operational Activities

System	Description
MAF/TIGER: Master Address File/ Topologically Integrated Geographic Encoding and Referencing System	The MAF/TIGER System provides the corporate address list, the map data, the geocoding service, and the distribution of related geographic and address products.

System	Description
RTNP: Real-Time Non-ID Processing	Real-Time Non-ID Processing provides resolution of Non-ID responses at the time of collection (during ISR).
PEARSIS: Production Environment for Administrative Records Staging, Integration and Storage	PEARSIS provides a repository of federal administrative records and third party data as well as business logic for comparing that data with respondent-provided data, such as address, respondent name, telephone number, etc. PEARSIS serves two purposes for Non-ID: it can provide corrected address information to enhance the respondent-provided data, and it can also serve as one of the mechanisms to validate census responses which lack an ID.
MaCS: Matching and Coding Software	MaCS is a system that allows clerical matching and coding.

Other Technology Infrastructure employed for the NID Operation includes:

- HQ and NPC Office IT Infrastructure for conducting NID Operational work
- Census Network connectivity for data transmission between operational systems and operational sites

2.4 NID Data Flow and Operational Influences

Figure 2 is an Integrated Operations Diagram (IOD), which describes the design concepts for the response data collection operations for the 2020 Census (stateside and Puerto Rico). This diagram assumes that the frame has been developed and address canvassing operations are complete. The diagram shows the Response Processing Operation (RPO) as the hub of data collection and RPO's interactions with all the other 2020 Census operations that have a role in data collection. The discussion below walks the reader through the diagram, using the circled numbers to help the reader follow the flow.

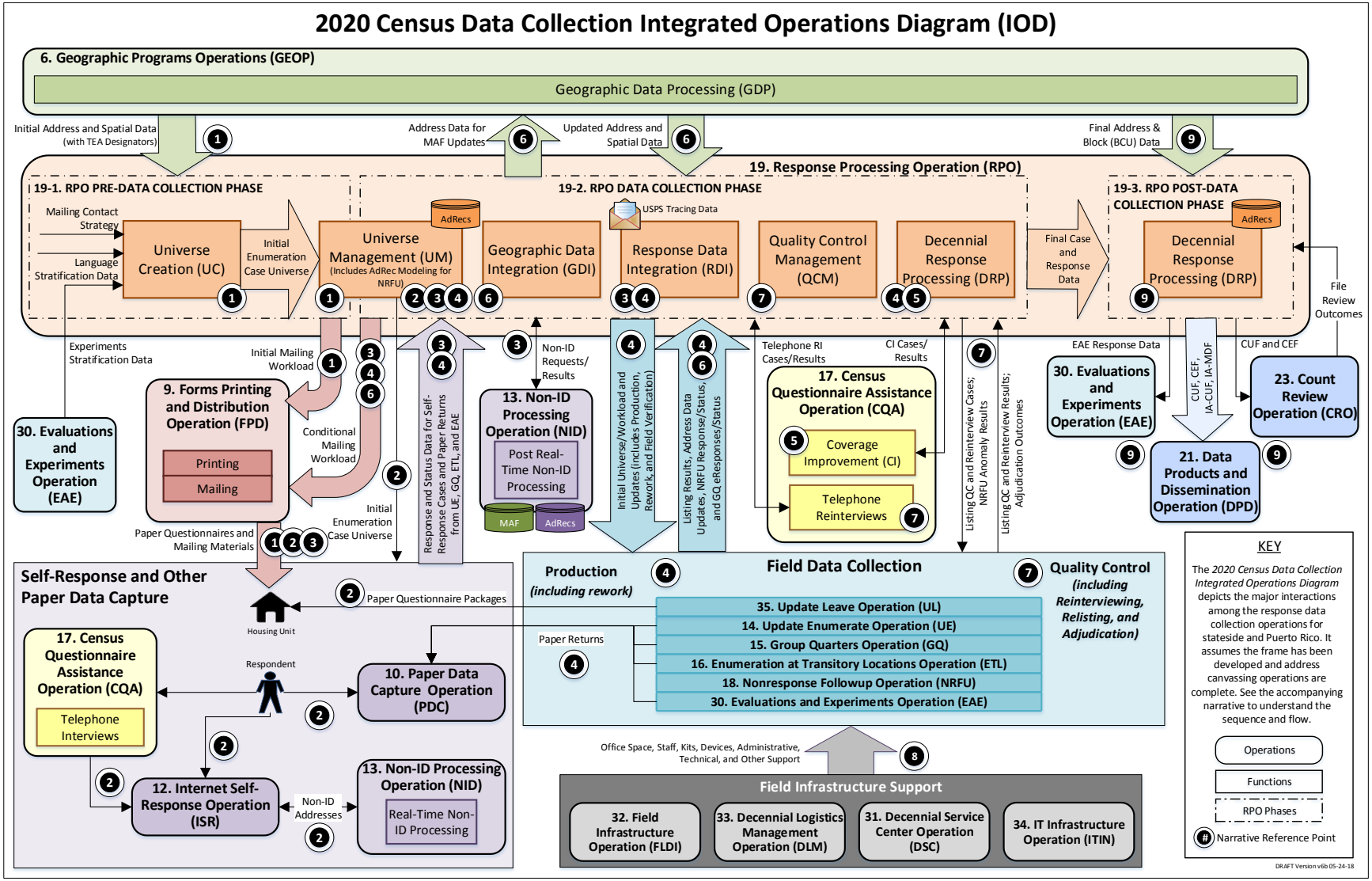

Figure 2: 2020 Census Data Collection – Integrated Operations Diagram

Pre-Data Collection

1 Before the start of data collection, the Geographic Data Processing (GDP) component of the Geographic Programs Operation (GEOP) sends initial Address and Spatial Data, including the Type of Enumeration Area (TEA) designations, to RPO so it can create the Initial Enumeration Case Universe. RPO also receives the mailing contact strategy (i.e., strategy for self-response stratification) so it can identify which housing units receive which kinds of mailings, language stratification information so it knows which language to use, and experimentation stratification data so it knows which housing units are to be included in what types of experiments. The creation of the initial Enumeration Case Universe and application of the stratification data are done as part of the RPO Universe Creation function.

Based on the stratifications, the RPO Universe Management function creates the initial mailing workload and sends it to the Forms Printing and Distribution Operation (FPD), which prints and then mails the appropriate materials to mailable housing units for the Self-Response (SR) and Update Leave (UL) TEAs. The first two of the five potential mailings for the SR TEA are sent unconditionally to all housing units in this TEA. These mailings are sent in English or English and Spanish based on the language stratification data and may include letters or—based on the self-response stratification—questionnaires. There is only one mailing for the UL TEA.

During Data Collection

2 Once the RPO Universe Creation work is complete, the Initial Enumeration Case Universe is managed by the RPO Universe Management function, which tracks changes to the enumeration universe for future mailings and for the data collection operations.

People living in housing units are encouraged to self-respond through a partnership and communications campaign (not shown on this diagram), through mailings sent by FPD, and through paper questionnaires left at housing units as part of the Update Leave Operation (UL).

To make it easy for people to respond and to reduce the paper workload, the Census Bureau is using an *Internet First* strategy for most housing units. Respondents can go to the internet and enter their response using the internet instrument as part of the Internet Self-Response Operation (ISR). The internet option offers additional flexibility and allows people to respond in multiple languages. If a respondent calls the Census Questionnaire Assistance Operation (CQA), a customer service representative may offer to collect the respondent's information by telephone. The information collected from these telephone interviews is entered by a customer service

representative using an ISR instrument similar to the public-facing instrument used by respondents.

Respondents can also mail paper questionnaire forms. These forms are received by the Paper Data Capture Operation (PDC), which uses scanning and imaging technology to capture the information from these forms.

ISR receives the Initial Enumeration Case Universe from the RPO Universe Management function and uses the Enumeration Case Universe to link responses provided through the internet instrument to the appropriate case. If respondents do not have their unique Census ID available, they are still able to complete the census questionnaire as a Non-ID response using the ISR instrument. The Non-ID Operation (NID) first attempts to match the address entered by the respondent or customer service representative to a known census address in real-time. For addresses that do not match, the response is still collected and is subject to later Non-ID Processing.

Response and status data collected through the various self-response data collection operations are sent (in digital format) to RPO's Response Data Integration function. Any responses collected through PDC or ISR that are submitted in languages other than English or Spanish are translated by staff at the Tucson call center on behalf of these operations before being sent to RPO. RPO's Universe Management function uses the response status data to determine the appropriate actions for the case.

During the self-response data collection time-period, reminder mailings are sent to housing units in the SR TEA. The first reminder is sent to all housing units in the SR TEA using the initial mailing workload as discussed above. Subsequent reminders are conditional and are only sent to those housing units that have not yet responded. The RPO Universe Management function sends a Conditional Mailing Workload to the FPD operation for these nonresponding units.

Any remaining Non-ID cases are sent by RPO to NID for post real-time Non-ID processing, which attempts to match addresses provided by respondents to known addresses in the Master Address File (MAF) using automated and clerical procedures. As needed, administrative records (AdRecs) are used to supplement the matching process. Most of these Non-ID cases will be from internet responses that could not be matched during real-time Non-ID processing. In addition, post data capture Non-ID processing will be required for paper forms for which the Census ID could not be read during data capture. The results of post real-time Non-ID matching are sent back to RPO. Based on predefined business rules, some of the responses that are not able to be matched through NID are sent to the field for verification as part of the Nonresponse Followup Operation (NRFU).

The discussion above covers self-responses for people living in housing units. Special operations also exist to collect data from people living in other types of living quarters or for whom self-response is not a viable option:

- The Group Quarters Operation (GQ) enumerates people living in group quarters (e.g., dormitories, correctional facilities, and nursing/skilled-nursing facilities) as well as people experiencing homelessness and receiving services at service-based locations such as soup kitchens. GQ also enumerates people living on maritime vessels and receives administrative records for people living in the Military TEA, which includes both on-base group quarters and on-base housing units.
- The Enumeration at Transitory Locations Operation (ETL) enumerates people who are living in special locations--such as recreational vehicle parks, campgrounds, racetracks, circuses, carnivals, marinas, hotels, and motels--and who do not have a Usual Home Elsewhere.
- The Update Enumerate Operation (UE) lists and enumerates housing units in areas that pose unique challenges to the standard self-response data collection operations. These housing units are in the UE and Remote Alaska TEAs, which cover remote areas of the country and other small selected areas.

NRFU is another special operation whose primary purposes are to determine the housing unit status of addresses in the SR and UL TEAs for which a self-response was not received and to enumerate those that are believed to be occupied. As mentioned in number 3 above, NRFU also performs a field verification activity to verify selected addresses for Non-ID self-responses that could not be matched to known addresses through NID.

Based on the universe case type (derived from TEA and living quarter type), RPO sends the Initial Enumeration Case Universe/Workload to the GQ, ETL, and UE operations. GQ uses this universe to perform an advance contact activity to collect general information and determine the preferred method of enumeration. ETL also performs an advance contact activity to schedule appointments for enumerating its universe of cases.

NRFU does not require advance contact activities. For NRFU, the RPO Universe Management function creates an Initial Case Universe/Workload based on an AdRec modeling activity. Four possible status outcomes result from this modeling for a given address:

- AdRec Vacant: No one lives there.
- AdRec Delete: There is no housing unit at that address.
- AdRec Occupied: There is a high probability that someone lives there and the Census Bureau has high-quality data about that housing unit.

- AdRec No Determination: Administrative data are not sufficient to help determine the housing unit status.

Only those addresses that are determined to be AdRec Occupied or AdRec No Determination are included in the initial NRFU workload. AdRec Vacant and AdRec Delete housing units receive an additional mailing from FPD. The RPO Universe Management function provides this additional mailing workload to FPD (as another type of Conditional Mailing).

For AdRec Occupied and AdRec No Determination cases, NRFU sends to RPO information regarding the success of an enumeration attempt as part of the response status data. Housing units that have been determined through administrative records modeling to be occupied are visited only once during NRFU. If these cases have not been successfully enumerated from this one visit (attempt), then RPO triggers one final mailing to these homes (from FPD) to encourage these households to self-respond. These housing units are removed from the follow-up workload.

Self-responses can continue to arrive at any time during NRFU. Accordingly, RPO flags housing units in the follow-up workload for which RPO has received a self-response or tracing information from the United States Postal Service (USPS) that indicates that a return is on its way to one of the paper data capture facilities. NRFU is notified about these flagged households as soon as the information is available so that it can remove the housing units from the daily workload, if possible. Any self-responses that are flagged but later found by RPO to have insufficient enumeration data are added back to the NRFU workload for continued enumeration attempts. The RPO Universe Management function tracks this information and uses it to determine what to include in the next day's follow-up workload. Housing units that have been successfully enumerated are not included in subsequent follow-up workloads.

For NRFU, field data are collected by electronic devices. The electronic data are sent to the RPO Response Data Integration function, which subsequently provides this information to the Decennial Response Processing function for further processing. Paper questionnaires are used to enumerate at living quarters during UE and at housing units during ETL. These paper questionnaires are checked in at area census offices (ACOs) and then sent to the paper data capture facilities, where they are scanned and imaged by PDC. PDC sends the captured data and case status information to RPO in digital format.

GQ is primarily a paper operation. Group quarter responses collected on paper questionnaires are checked in at the ACOs and sent to PDC for scanning and imaging before being transmitted to RPO. Case status updates are sent to RPO as part of the check-in process. GQ data provided in electronic files (eResponses) require additional processing to prepare the data before they are electronically transmitted to RPO. GQ data collected on paper rosters are entered by ACO clerks into the same file format that is used for eResponses. These response data are then sent electronically to RPO.

As part of the Evaluations and Experiments (EAE) operation, the Census Bureau may test different questionnaire content and data collection methodologies during the 2020 Census to help evaluate content and modes for the 2020 Census and inform design changes for the 2030 Census. Addresses that are selected to be part of these experiments are identified in the initial universe (see number 1 above). For those addresses, the EAE operation collects the data and provides responses and status of responses to the RPO Response Data Integration function, which subsequently provides this information to the Decennial Response Processing function. Any responses collected by EAE on paper returns are processed by PDC and sent by that operation to RPO.

RPO's Decennial Response Processing function performs coding and other preparation steps on incoming response data. In addition, special activities are performed to identify possible fraudulent returns.

The RPO Universe Management function also supports a Coverage Improvement (CI) activity, the goal of which is to ensure a high-quality census by conducting telephone follow-up for households where there could be coverage issues on submitted responses. CI is a follow-up activity and is therefore considered a component of NRFU, however, the CI telephone interviews are performed by CQA. CQA receives from the RPO Universe Management function a set of cases with potential coverage issues and provides the results of these cases back to RPO's Response Data Integration function.

As noted above, universe and address updates occur during field operations. Census Bureau field staff may uncover changes to addresses as they perform their daily assignments in any field operation. For example, a UL or UE lister may add an address or find an error in the address or geographic data based on the listing activities, or a NRFU enumerator or a UL lister may go to an address and find an additional unit such as a garage apartment located on the premises. All listing results and other address changes are sent to the RPO Geographic Data Integration function, which passes the information on to the GDP function in GEOP.

Changes to the address list may also come from other sources such as appeals from the Local Update of Census Addresses Operation (LUCA), the review of addresses performed by the Count Review Operation (CRO), and updated files from the postal service. The GDP function within GEOP updates the address data and sends these RPO's Universe Management Function, which provides these cases to the appropriate operation. Depending on the timing, living quarter type, and TEA designation, RPO may initiate one or more mailings to these new addresses through FPD to encourage self-response.

All field operations (GQ, UL, ETL, UE, and NRFU) include quality control (QC) functions. For GQ, the RPO Quality Control Management function creates and sends a sample of the field enumeration cases to ACO staff, who conduct telephone reinterviews for this sample set of cases to confirm that a GQ enumerator visited the site and that the total population count is correct.

For UL, the RPO Quality Control Management function selects a sample set of BCUs for relisting. The QC Listing Results are sent back to the RPO Quality Control Management function for further processing. RPO does not send any changes resulting from UL listing to GEOP until the lister has passed the QC check. Further, if the QC activities result in a hard fail, BCUs already worked may require relisting. RPO includes this rework in subsequent UL production workloads.

QC methods for ETL and UE will be performed primarily in the field, tailored to meet the circumstances of these unique paper-based operations.

NRFU includes multiple methods for ensuring high-quality data collection. Several of these are integrated into the staff management activities. In addition, samples of field follow-up cases are selected for reinterview (RI), a process whereby the response data are collected again and compared to the original collected data. The RPO Quality Control Management function creates the RI workload and sends it to the CQA or NRFU operation. Those RI cases for which a valid telephone number has been provided are contacted by CQA on behalf of NRFU. The remaining RI cases, as well as those that cannot be reached by telephone, are handled by NRFU field staff. The RI results are sent to the RPO Quality Control Management function, which performs an automated comparison of the RI data against the original data. Anomalies are sent back to NRFU, where additional research is conducted to determine how these cases should be handled. The results of this review (adjudication outcomes) are sent back to the RPO Quality Control Management function. In some cases, the adjudication requires that prior cases performed by the enumerator at fault be reworked. RPO puts these cases back into the NRFU workload as appropriate.

NRFU, UE, UL, ETL, and parts of the GQ Operation are performed in the field. Several operations provide the support for these field data collection activities. The Field Infrastructure Operation (FLDI) recruits, hires, onboards, and trains the staff needed to conduct these operations and also operates the field offices during production. The Decennial Logistics Management Operation (DLM) provides the space and logistics support (e.g., supplies, kits, etc.) for the offices and the field staff. The Decennial Service Center Operation (DSC) provides technical support for field and field office staff. Finally, the IT Infrastructure Operation (ITIN) provides the hardware and software used by the field staff and field offices.

Post-Data Collection

Once data collection is complete, additional processing occurs to prepare the counts for apportionment, redistricting data, and other data products. The RPO Decennial Response Processing function handles this post-data collection processing, which includes multiple activities:

- Supplementing response data with administrative records for those cases that had been identified as AdRec Occupied but for which a nonresponse follow-up attempt was unsuccessful and no subsequent self-response was received.
- Determining the final enumeration universe by reconciling or applying final address and BCU data from the GDP component of GEOP.
- Determining the returns of record for situations where multiple responses have been received for the same housing unit.
- Performing count and status imputations.
- Performing consistency editing and characteristic imputation supplemented with administrative records data.
- Applying tabulation geography.
- Performing disclosure avoidance (Note: This is done by RPO for Island Areas Censuses data only. Disclosure avoidance for Stateside/PR data is handled by DPD).

Similar processing occurs for responses from group quarters. Responses collected through the EAE operation may require slightly different activities.

Through these processing activities, the RPO Decennial Response Processing function creates multiple files for Stateside/PR response data, including the Decennial Response File (DRF), the Census Unedited File (CUF), and the Census Edited File (CEF). RPO also creates an Island Areas CUF (IA-CUF), Island Areas CEF (IA-CEF), and Island Areas Microdata Detail Files (IA-MDF) for the Island Areas Censuses (IAC) response data. Each of these files is reviewed within the Census Bureau before the data are sent to the next stage of processing: Some of these reviews are done as part of the CRO. The CUF, the CEF, the IA-CUF, and the IA-MDF are sent to DPD via the Census Data Lake (CDL). DPD uses these files as inputs for data products creation and also creates the Stateside/PR MDFs using the CEF as input. RPO also sends data collected as part of EAE back to the EAE operation for further analysis.

2.5 NID Design Assumptions and Constraints

2.5.1 Assumptions

- 2020 Non-ID Processing will account for non-ID response from these modes including, but not limited to the following:
    - Respondents who do not provide a Census ID when prompted by the internet instrument (including respondents calling CQA).
    - Respondents who provide a Census ID (e.g., from a Census Bureau-provided postcard) when prompted by the Internet instrument but do not confirm the address associated with that ID when prompted by the Internet instrument. Instead, they provide a different living quarters address for their household, thus "spawning" a Non-ID case from an ID'ed response.
    - Paper questionnaires received at data capture centers that lack a Census ID (e.g., exception check-in cases where the barcode was damaged, missing, or is otherwise unreadable).
- Mechanisms for real-time matching and geocoding will be developed or are readily available, including the following:
    - Real-time address standardization.
    - Real-time access to MTdb data for matching and geocoding Non-ID cases.
- Applications and infrastructure associated with Non-ID Processing will safeguard Title 13 information.
- Administrative record data of sufficient quality and quantity will be available to Automated Non-ID Processing to enable the process of correcting erroneous information in some of the respondent-provided addresses, as well as to supply missing data items.
- Non-ID cases not resolved (i.e., matched to a MAF record with a confirmed BCU geocode) during automated processing will be passed to a Clerical Non-ID processing operation, which requires Census Bureau staff to interactively match and geocode addresses from Non-ID responses.

2.5.2 Constraints

- Census test sites over the course of the decade cannot completely represent the full set of challenges Non-ID processing will encounter on a national scale during the 2020 Census. For example, there are a number of anomalous address systems used in specific geographic areas (e.g., hyphenated address numbers in Queens, New York, or the quadrant system used in many parts of Utah). However, the sites selected for the census tests this decade should provide an opportunity to examine many of the challenges anticipated.

- Administrative records coverage will vary by geographic area as well as source. Therefore, the ability to correct or supplement respondent address data will be subject to the limitations of coverage.
- Use of administrative records in Non-ID processing will be governed by constraints associated with the sources of data.

3. Non-ID Processing Operation (NID) Detailed Process Description

Figure 3 is a top-level Business Process Model (BPM) showing the Level 1 activity areas within the NID Operation. BPMs for the 2020 Census follow industry-standard Business Process Model and Notation (BPMN). An explanation of how to read the BPMN notations and a full-sized copy of all of the BPMN diagrams for this operation are provided under separate cover.

This top-level BPM serves as the Context Model for the NID Operation. A BPMN Context Model displays the high-level activities within the operation and relationships between them, whereas the IDEF0 Context Diagram shown earlier depicts the boundaries of the operation or activity and the interfaces between the operation or activity and other operations and activities with which it is associated.

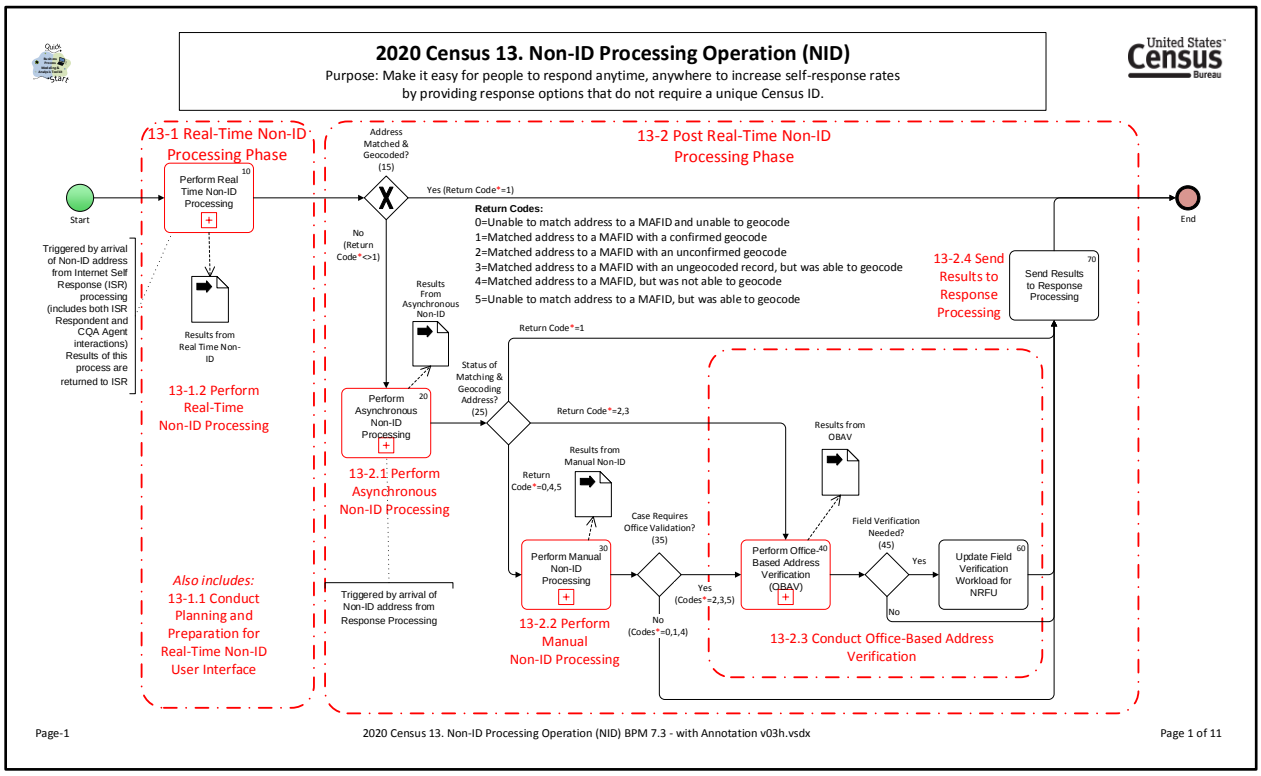

Figure 3: NID Operation Context Model

The NID Operation is subdivided into the following Activity Areas:

- Real-Time Non-ID Processing Phase [13-1].
- Post Real-Time Non-ID Processing Phase [13-2].

The business processes for each of these Level 1 activity areas are discussed along with their inputs and outputs in the following subsections.

3.1 Real-Time Non-ID Processing Phase [13-1]

Figure 4 shows the BPM for the Real-Time Non-ID Processing Phase [13-1] activity area (within the gray rounded rectangle) and its constituent activities within the overall context of the NID Operation.

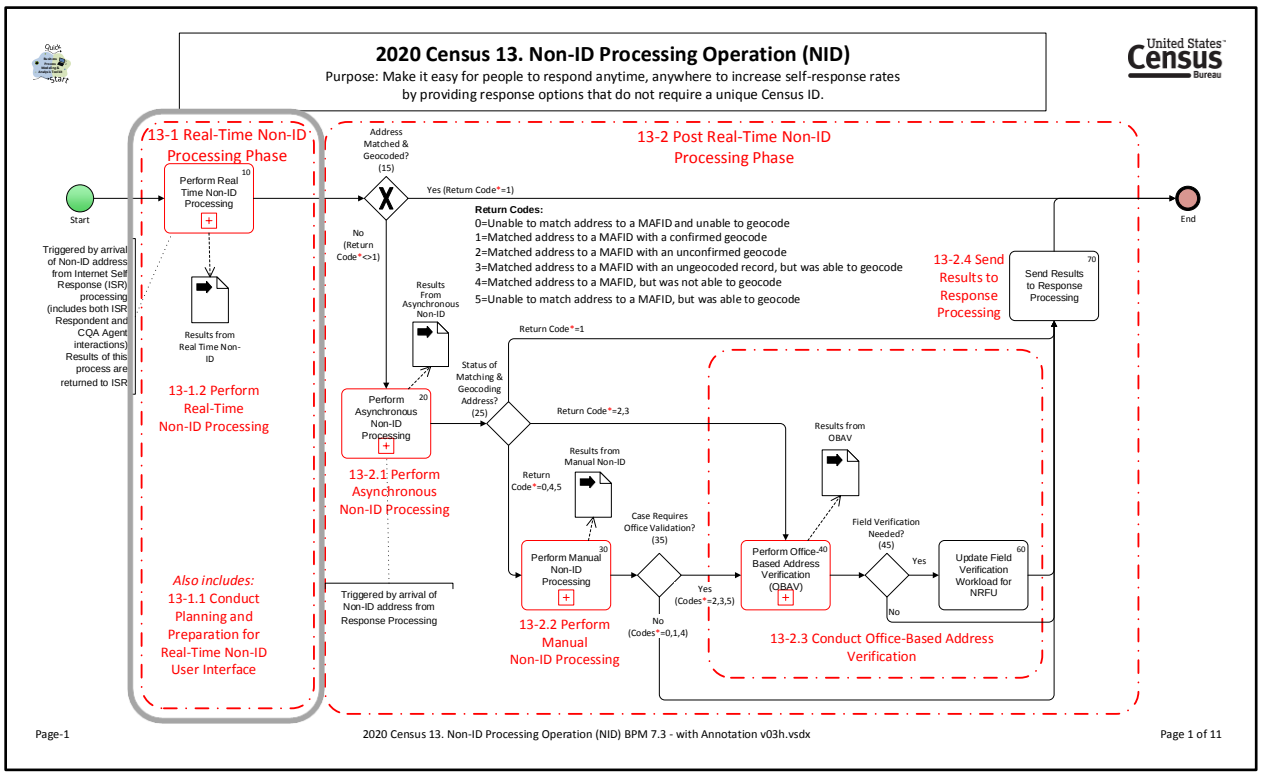

Figure 4: Real-Time Non-ID Processing Phase [13-1] Constituent Activities

The Real-Time Non-ID Processing (RTNP) Phase is subdivided into the following Activity Areas:

- Real-Time Non-ID Processing Phase [13-1].
  - Conduct Planning and Preparation for Real-Time Non-ID User Interface [13-1.1].
  - Perform Real-Time Non-ID Processing (RTNP) [13-1.2].
    - Perform Real-Time Address Standardization [13-1.2.1].
    - Perform Real-Time Non-ID Matching and Geocoding [13-1.2.2].

Subsequent sections describe the Real-Time Non-ID Processing operational subactivities in detail.

3.1.1 Conduct Planning and Preparation for Real-Time Non-ID User Interface [13-1.1]

NID Operation staff works with ISR on the development of specifications for RTNP address data collection.

3.1.2 Perform Real-Time Non-ID Processing (RTNP) [13-1.2]

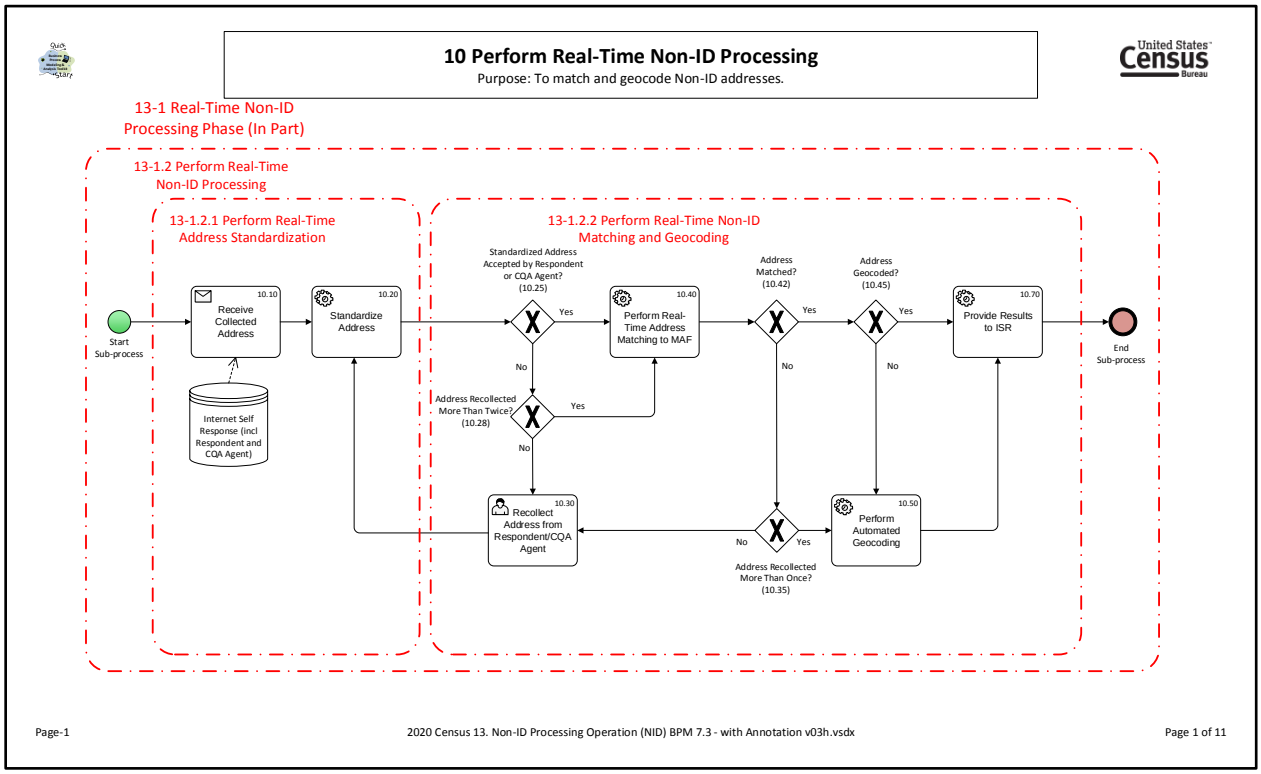

Figure 5: Perform Real-Time Non-ID Processing (RTNP)

Perform Real-Time Non-ID Processing (RTNP) is subdivided into the following Activity Areas.

- Perform Real-Time Non-ID Processing (RTNP) [13-1.2].
  - Perform Real-Time Address Standardization [13-1.2.1].
  - Perform Real-Time Non-ID Matching and Geocoding [13-1.2.2].

3.1.2.1 Perform Real-Time Address Standardization [13-1.2.1]

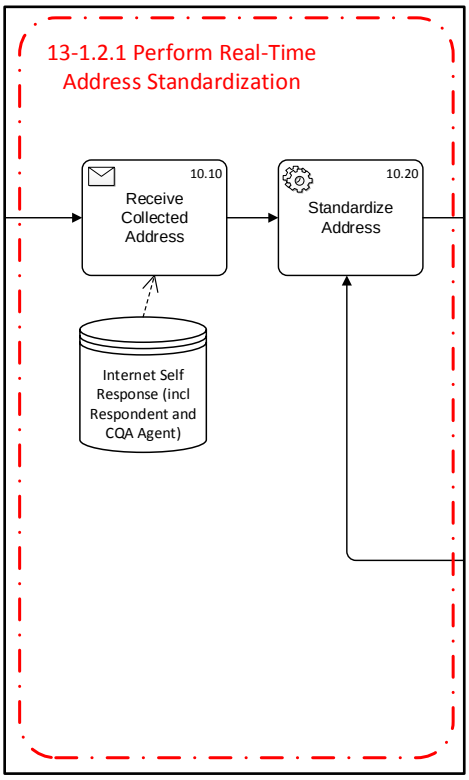

Figure 6: Perform Real-Time Address Standardization

As shown in the BPM above, there are two steps involved in this activity:

- Receive Collected Address [10.10].
- Standardize Address [10.20].

Real-Time Address Standardization receives collected addresses from ISR (which includes responses directly from respondents and CQA agents). Addresses are put into a standard format (proper abbreviations, placement of address components, and layout) in preparation for matching and geocoding. This standard format provides the consistency required to match to the MAF/TIGER database.

3.1.2.2 Perform Real-Time Non-ID Matching and Geocoding [13-1.2.2]

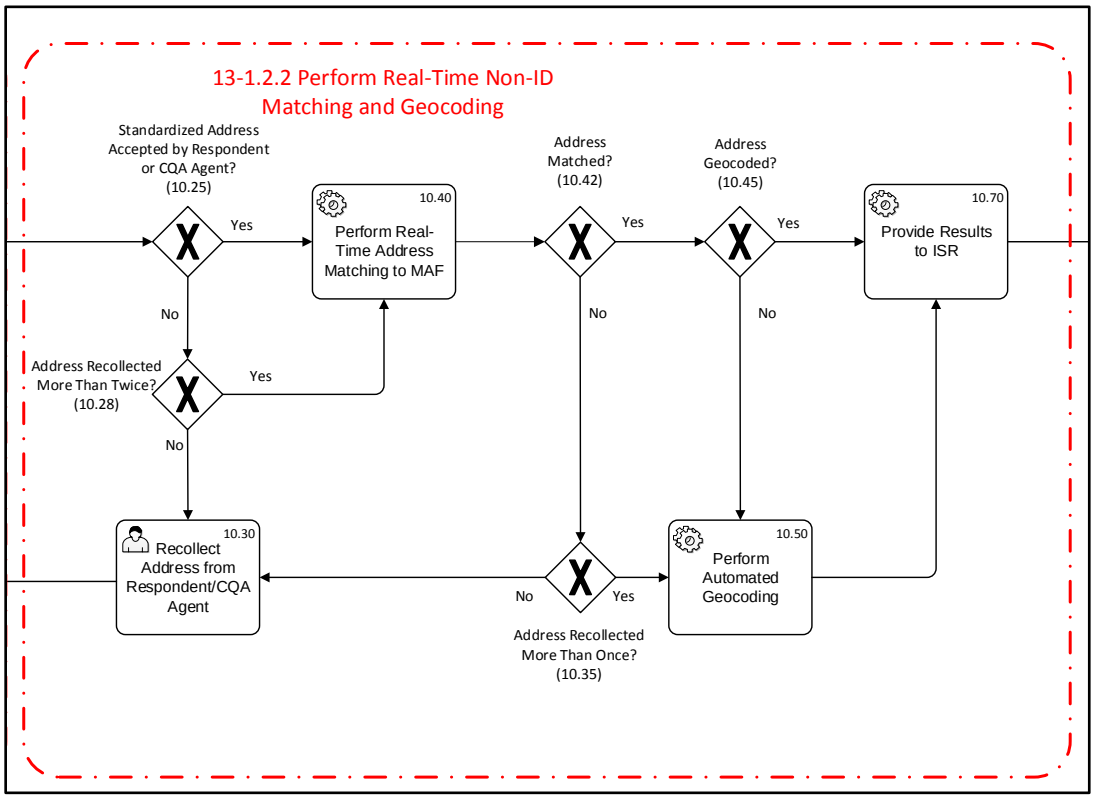

Figure 7: Perform Real-Time Non-ID Matching and Geocoding

As shown in the BPM above, there are multiple steps involved in this activity:

- Recollect Address from Respondent/CQA Agent [10.30].
- Perform Real-time Address Matching to MAF [10.40].
- Perform Automated Geocoding [10.50].
- Provide Results to ISR [10.70].

If the respondent or CQA agent does not accept the standardized address, the multifunctional system will collect a new/updated address from the respondent or CQA agent no more than two times. Once either the respondent or CQA agent accepts the standardized address or the respondent reaches the collection threshold, there is an attempt to match the address to the MAF in real-time. If the address did not match a record in the MAF and the respondent has not reached the collection threshold and then provides a new/updated address, there could be another attempt to match.

If the address is matched to a record in the MAF with a confirmed geocode, the matching and geocoding process is complete. If the address is matched to a record in the MAF with an

unconfirmed geocode, the address will be passed to Office-Based Address Verification. If the address either matches a record in the MAF that does not have a geocode in MTdb or does not match to a record in the MAF, we will attempt to geocode the address in real-time. If we are able to automate a geocode, the address will be passed to Office-Based Address Verification. Any non-ID respondent address that does not match to a MAF record during real-time will be passed to the next phase: Post Real-Time Non-ID Processing.

3.2 Post Real-Time Non-ID Processing Phase [13-2]

Figure 8 shows the BPM for the Post Real-Time Non-ID Processing Phase [13-2] activity area (within the gray rounded rectangle) and its constituent activities within the overall context of the NID Operation.

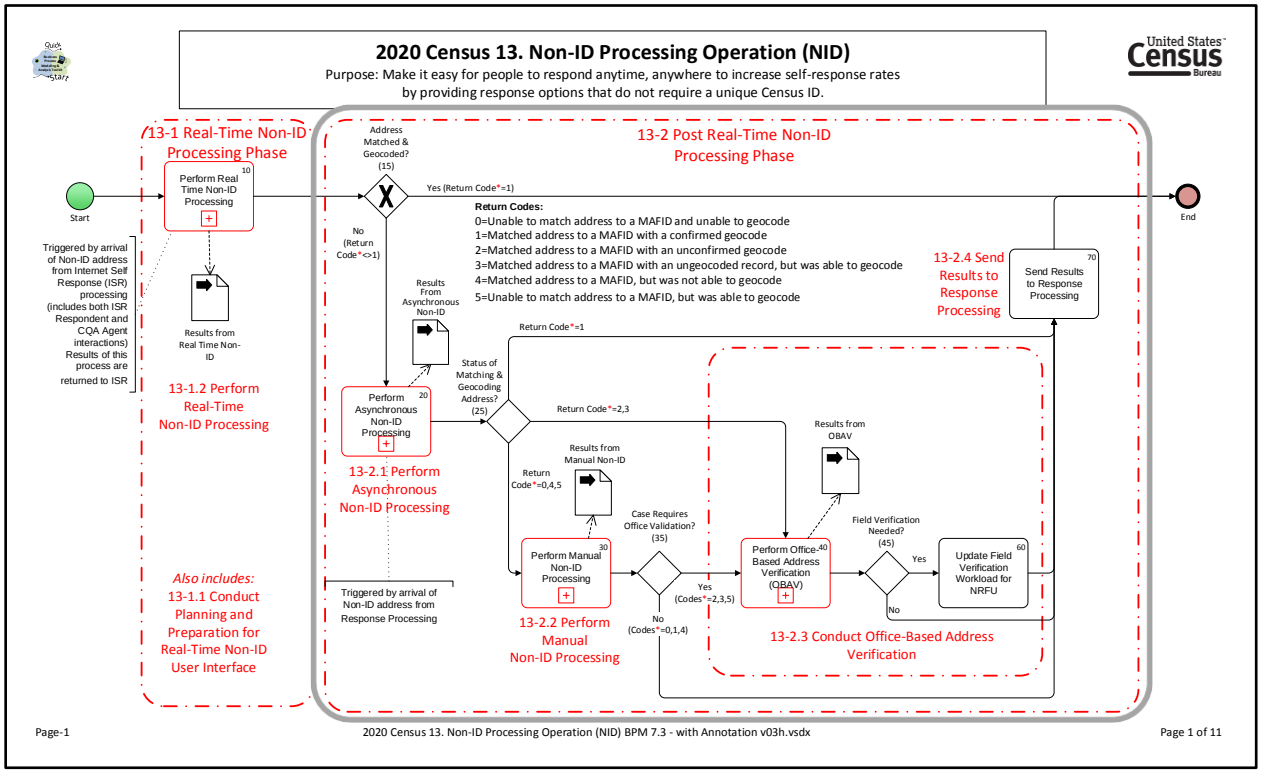

Figure 8: Post Real-Time Non-ID Processing Phase [13-2] Constituent Activities

The Post Real-Time Non-ID Processing Phase is subdivided into the following Activity Areas:

- Post Real-Time Non-ID Processing Phase [13-2].
  - Perform Asynchronous Non-ID Processing [13-2.1].
  - Perform Manual Non-ID Processing [13-2.2].
  - Conduct Office-Based Non-ID Address Verification [13-2.3].
  - Send Results to Response Processing [13-2.4].

Subsequent sections describe the Post Real-Time Non-ID Processing operational subactivities in detail.

3.2.1 Perform Asynchronous Non-ID Processing [13-2.1]

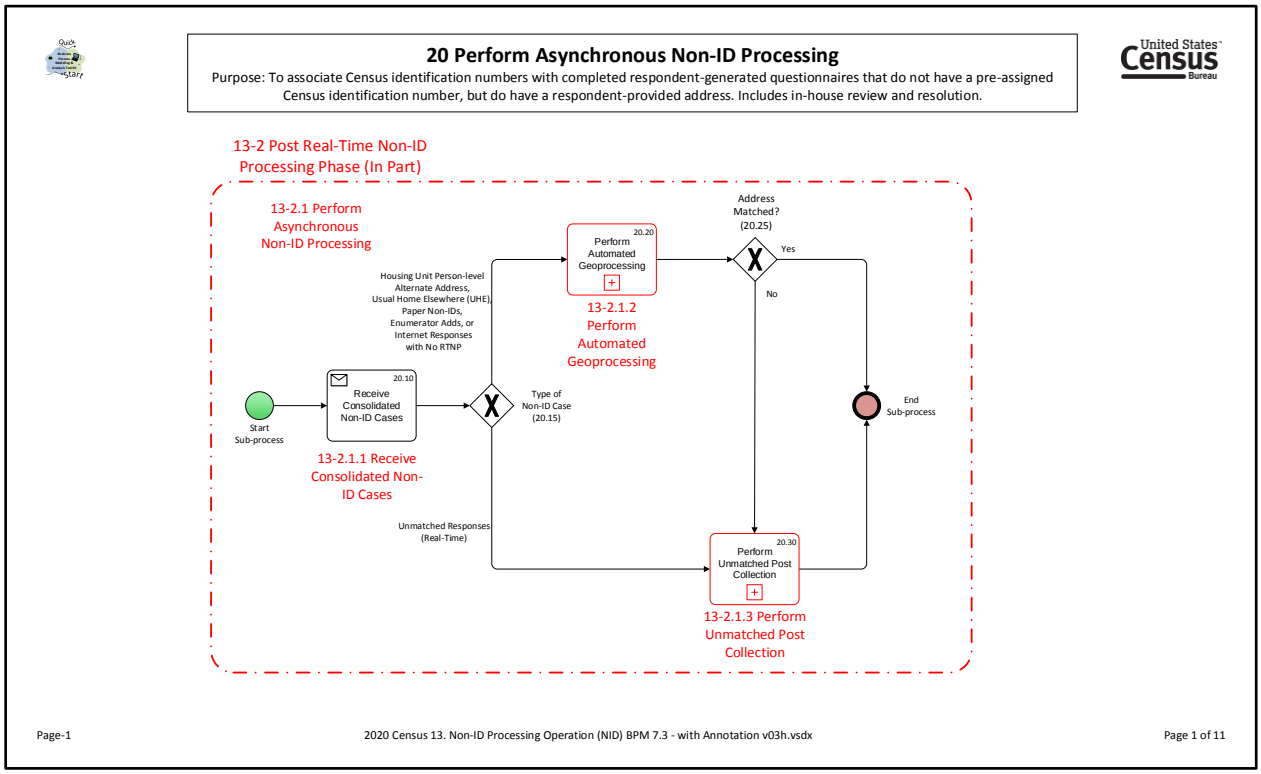

Figure 9: Perform Asynchronous Non-ID Processing

Perform Asynchronous Non-ID Processing is subdivided into the following Activity Areas.

- Perform Asynchronous Non-ID Processing [13-2.1].
  - Receive Consolidated Non-ID Cases [13-2.1.1].
  - Perform Automated Geoprocessing [13-2.1.2].
  - Perform Unmatched Post Collection [13-2.1.3].

3.2.1.1 Receive Consolidated Non-ID Cases [13-2.1.1]

As shown in the BPM there is one step involved in this activity:

- Receive Consolidated Non-ID Cases [20.10].

Asynchronous Non-ID Processing receives addresses from Response Processing.

3.2.1.2 Perform Automated Geoprocessing [13-2.1.2]

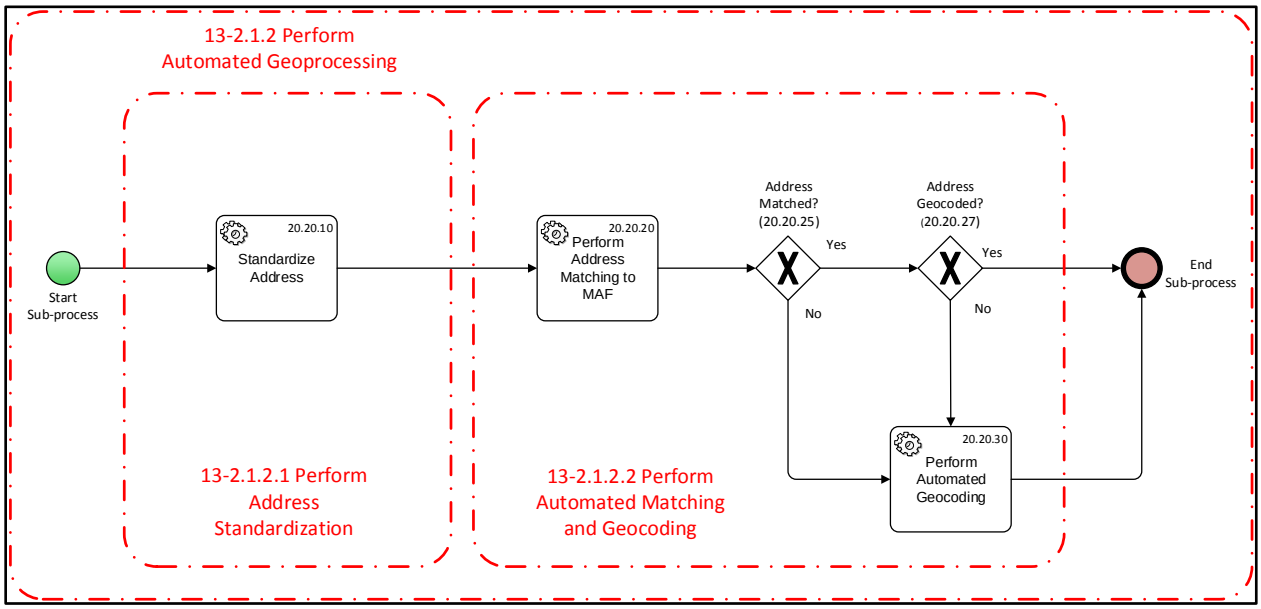

Figure 10: Perform Automated Geoprocessing

Perform Automated Geoprocessing is subdivided into the following Activity Areas:

Perform Address Standardization [13-2.1.2.1]

As shown in the BPM there is one step involved in this activity:

- Standardize Address [20.10.10].

Consolidated Non-ID cases received during Asynchronous Non-ID processing are standardized in preparation for matching and geocoding.

Perform Automated Matching and Geocoding [13-2.1.2.2]

As shown in the BPM, there are two steps involved in this activity:

- Perform Address Matching to MAF [20.20.20].
- Perform Automated Geocoding [20.20.30].

There is an attempt to match the standardized address to the MAF. If the address does not match a record in the MAF, then there is an attempt to geocode the address. If the address matches a record in the MAF but this record is not geocoded, there is an attempt to geocode the address.

3.2.1.3 Perform Unmatched Post Collection [13-2.1.3]

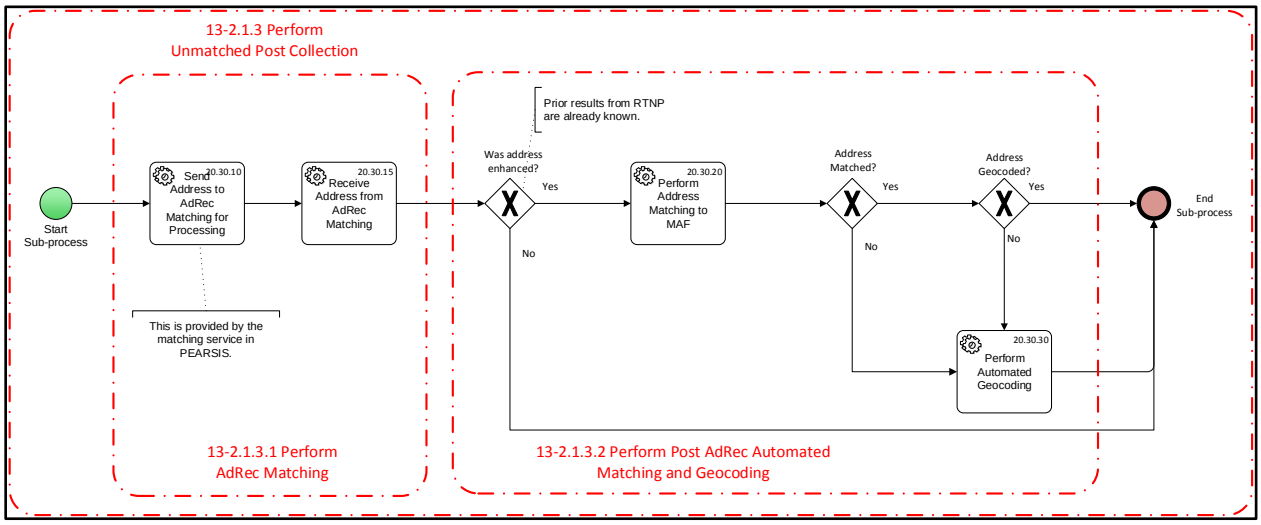

Figure 11: Perform Unmatched Post Collection

Perform Unmatched Post Collection is subdivided into the following Activity Areas:

- Perform Unmatched Post Collection [13-2.1.3].
  - Perform AdRec Matching [13-2.1.3.1].
  - Perform Post AdRec Automated Matching and Geocoding [13-2.1.3.2].

Perform AdRec Matching [13-2.1.3.1]

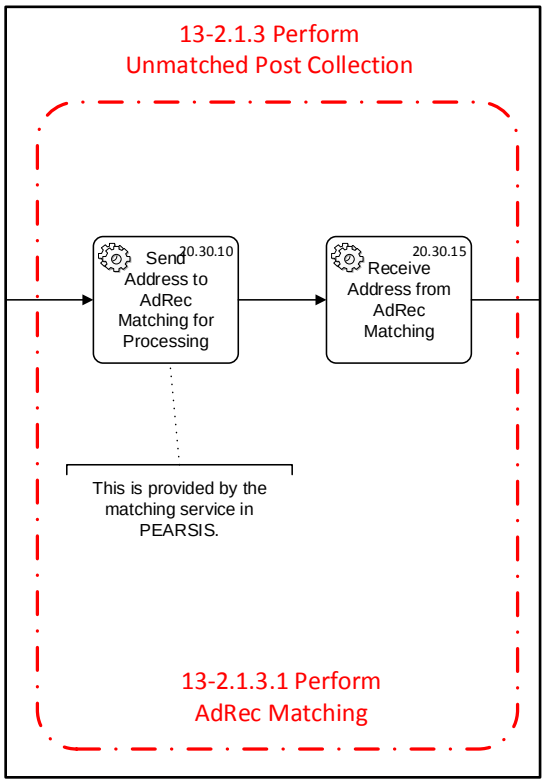

Figure 12: Perform AdRec Matching

As shown in the BPM, there are two steps involved in this activity:

- Send Address to AdRec Matching for Processing [20.30.10].
- Receive Address from AdRec Matching [20.30.15].

Non-ID cases are standardized in preparation for AdRec matching. There is an attempt to match the standardized address to the AdRec composite file. If the address did not match the AdRec composite file, then the standardized version of the address is appended to the updated output file. If the address matches the AdRec composite file, then the AdRec version of the address is appended to the updated output file. Either the unmatched standardized or the matched AdRec address would now represent the best version of the address. This output file containing enhanced addresses will be put through automated matching and geocoding in subsequent activities.

Perform Post AdRec Automated Matching and Geocoding [13-2.1.3.2]

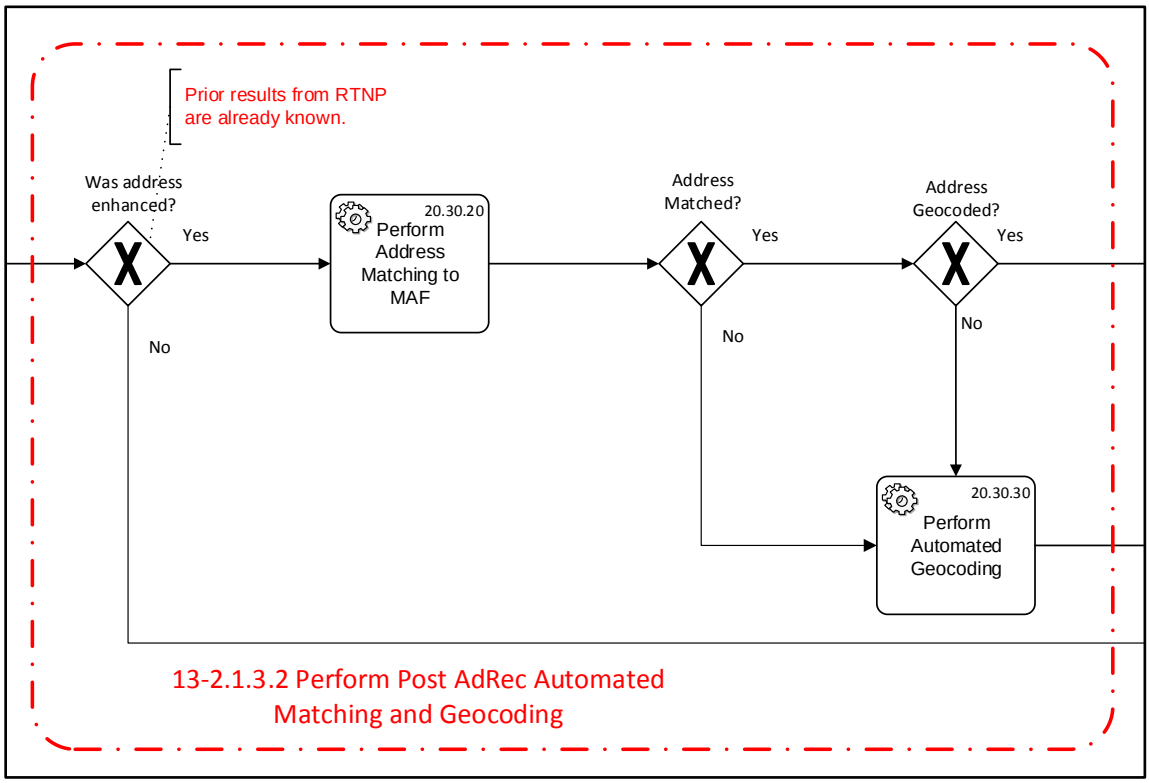

Figure 13: Perform Post AdRec Automated Matching and Geocoding

As shown in the BPM, there are potentially two steps involved in this activity:

- Perform Address Matching to MAF [20.30.20].
- Perform Automated Geocoding [20.30.30].

There is an attempt to match the addresses on the output file from AdRec matching to the MAF. If an address did not match a record in the MAF, then there is an attempt to geocode that address. If an address matches a record in the MAF but this record was not geocoded, there is an attempt to geocode that address. Any address not matching to a MAF record is also sent on to the next phase: Manual Non-ID Processing.

3.2.2 Perform Manual Non-ID Processing [13-2.2]

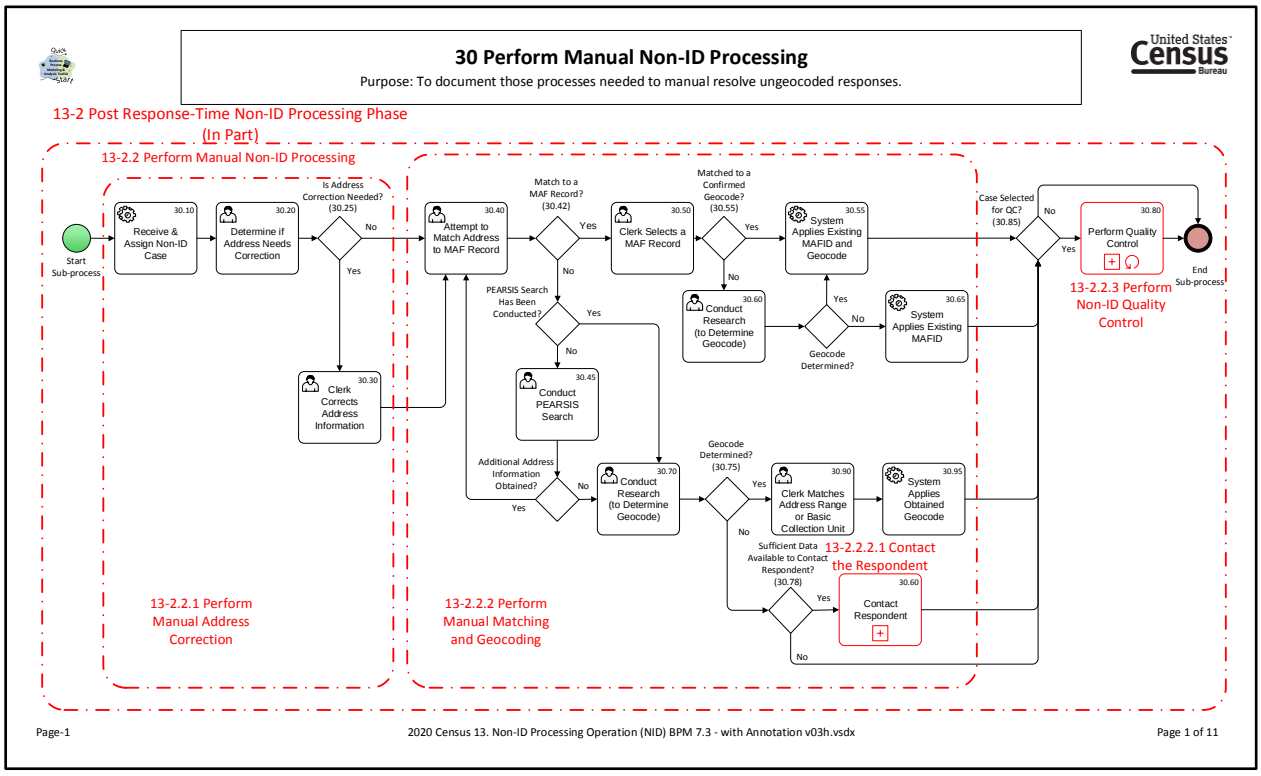

Figure 14: Perform Manual Non-ID Processing

Perform Manual Non-ID Processing is subdivided into the following Activity Areas:

- Perform Manual Address Correction [13-2.2.1].
- Perform Manual Matching and Geocoding [13-2.2.2].
    - Contact the Respondent [13-2.2.2.1].
- Perform Non-ID Quality Control [13-2.2.3].

3.2.2.1 Perform Manual Address Correction [13-2.2.1]

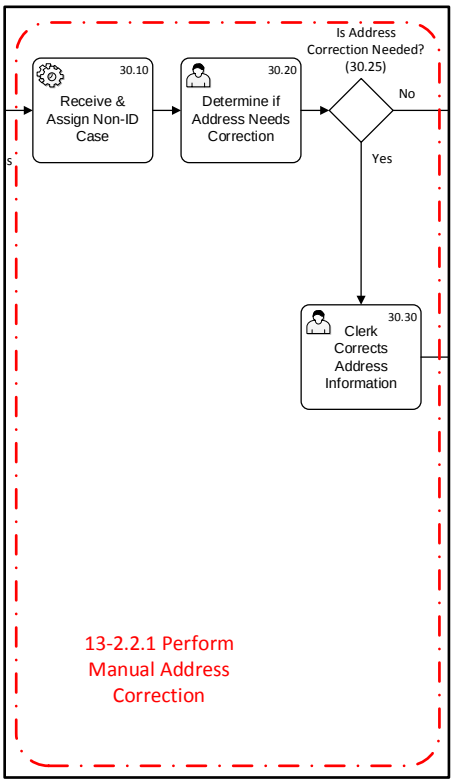

Figure 15: Perform Manual Address Correction

As shown in the BPM above, there are three steps involved in this activity:

- Receive and Assign Non-ID Case [30.10].
- Determine if Address Needs Correction [30.20].
- Clerk Corrects Address Information [30.30].

Perform Manual Address Correction is an attempt to correct or standardize an address in preparation for matching and geocoding. This involves visually inspecting the address to determine if it needs correction. For example, a clerk might see a common misspelling of a street name or something otherwise obvious to them but not detectable by an automated process. If the address does need correction, the clerk attempts to correct the address information.

3.2.2.2 Perform Manual Matching and Geocoding [13-2.2.2]

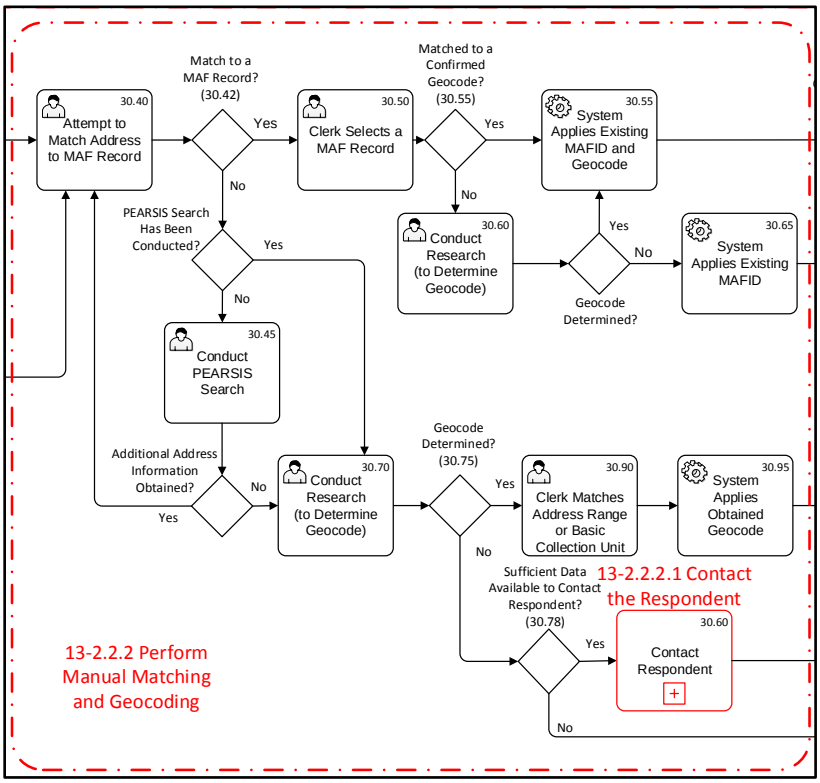

Figure 16: Perform Manual Matching and Geocoding

As shown in the BPM above, there are multiple steps involved in this activity:

- Attempt to Match Address to MAF Record [30.40].
- Conduct PEARSIS Search [30.45].
- Clerk Selects a MAF Record [30.50].
- System Applies Existing (Master Address File Identification) MAFID and Geocode [30.55].
- Conduct Research (to Determine Geocode) [30.60].
- System Applies Existing MAFID [30.65].
- Conduct Research (to Determine Geocode) [30.70].
- Clerk Matches Address Range or Basic Collection Unit [30.90]
- System Applies Obtained Geocode [30.95].
- Contact Respondent [30.60].
    - Note: This business process is discussed in detail in section 13-2.2.2.1.

Once a clerk corrects an address there is an attempt to match the corrected address and/or geocode it. First, the clerk attempts to match the corrected address to the MAF record and assign

a MAFID. If the address does not match to a MAF record, then the clerk attempts to geocode the address. In order to geocode an unmatched MAF record, the clerk conducts research to determine the geocode. This includes contacting the respondent, if needed. In some cases, a respondent may even be able to provide sufficient further information to help derive a match.

If the address is matched to a record in the MAF with a confirmed geocode, the matching and geocoding process is complete. If the address is not geocoded or is matched to a record in the MAF that had an unconfirmed geocode, the clerk attempts to confirm the geocode. If the clerk is unable to locate the address or unable to geocode it, the matching and geocoding process is complete.

Contact the Respondent [13-2.2.2.1]

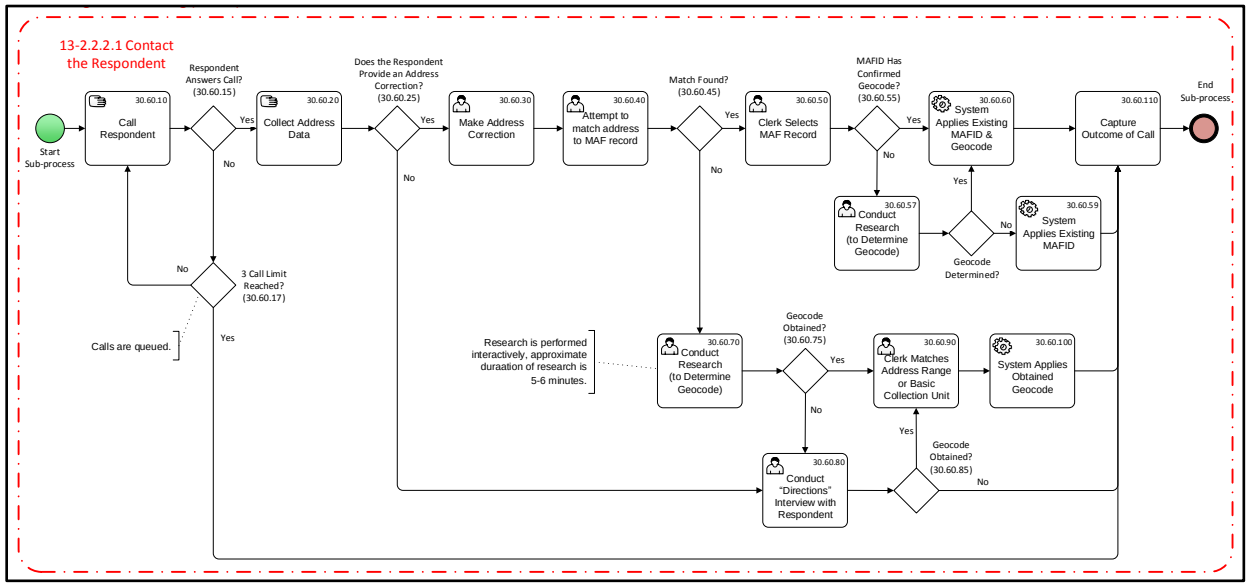

Figure 17: Contact the Respondent

As shown in the BPM, there are multiple steps involved in this activity:

- Call Respondent [30.60.10].
- Collect Address Data [30.60.20].
- Make Address Correction [30.60.30].
- Attempt to Match Address to MAF Record [30.60.40].
- Clerk Selects MAF Record [30.60.50].
- Conduct Research (to Determine Geocode) [30.60.57].
- System Applies Existing MAFID [30.60.59].
- System Applies Existing MAFID and Geocode [30.60.60].
- Conduct Research (to Determine Geocode) [30.60.70].

- Conduct "Directions Interview" with Respondent [30.60.80].
- Clerk Matches Address Range or Basic Collection Unit [30.60.90].
- System Applies Obtained Geocode [30.60.100].
- Capture Outcome of Call [30.60.110].

Contact the Respondent includes calling the respondent to collect a corrected address and/or conducting a "Directions Interview" with the respondent to determine the geocode. If the respondent provides an address correction, the clerk updates the address with the corrected information and then tries to match the address to a MAF record. If the address does not match, then the clerk conducts research to determine the geocode.

3.2.2.3 Perform Non-ID Quality Control [13-2.2.3]

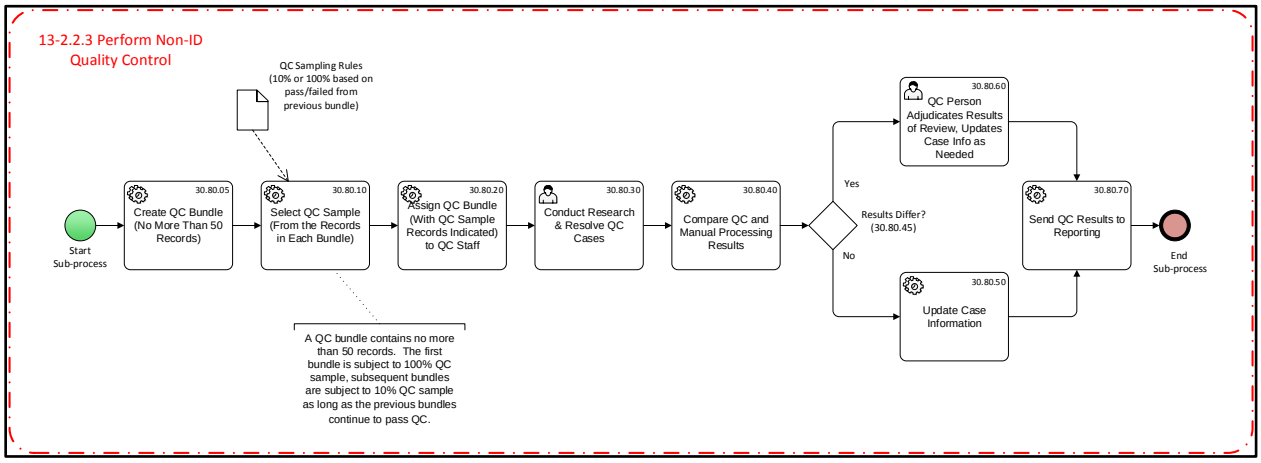

Figure 18: Perform Non-ID Quality Control

As shown in the BPM, there are multiple steps involved in this activity:

- Create QC Bundle (No more than 50 records) [30.80.05].
- Select QC Sample (from the Records in each Bundle) [30.80.10].
- Assign QC Bundle (with QC Sample Records Indicated to QC Staff) [30.80.20].
- Conduct Research and Resolve QC Cases [30.80.30].
- Compare QC and Manual Processing Results [30.80.40].
- Update Case Information [30.80.50].
- QC Person Adjudicates Results of Review, Updates Case Information as Needed [30.80.60].
- Send QC Results to Reporting [30.80.70].

Perform Non-ID Quality Control includes comparing QC and Manual Processing results. Matching and Coding Software (MaCS) selects a QC sample and assigns a case to a QC

reviewer. The QC reviewer then conducts research to resolve the case and compare the QC and manual processing results. If the results are different, the QC reviewer adjudicates the results of the review and updates case information as needed. If the results are not different, the MaCS updates the case information and sends the results to reporting.

3.2.3 Conduct Office-Based Address Verification [13-2.3]

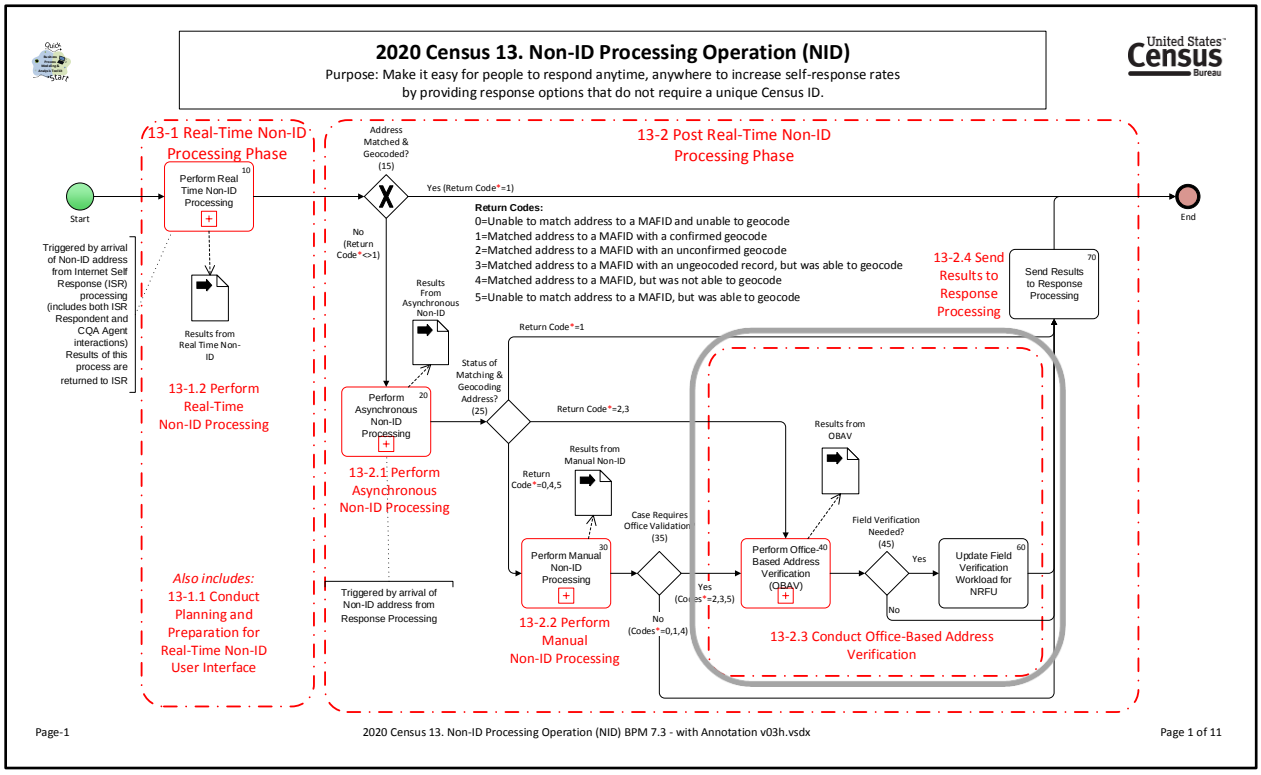

Figure 19: Conduct Office-Based Address Verification

There are two steps involved in this activity:

- Perform Office-Based Address Verification (OBAV) [13-2.3.1].
- Update Field Verification Workload for NRFU [13-2.3.2].

Office-Based Address Verification verifies the existence and BCU location of LQs using geographic reference materials in an office-based operation. This work serves as the basis for longer-term efforts to reduce costs for the 2020 Census by avoiding fieldwork traditionally necessary to perform address confirmation for eligible cases from Non-ID Processing.

3.2.3.1 Perform Office-Based Address Verification (OBAV) [13-2.3.1]

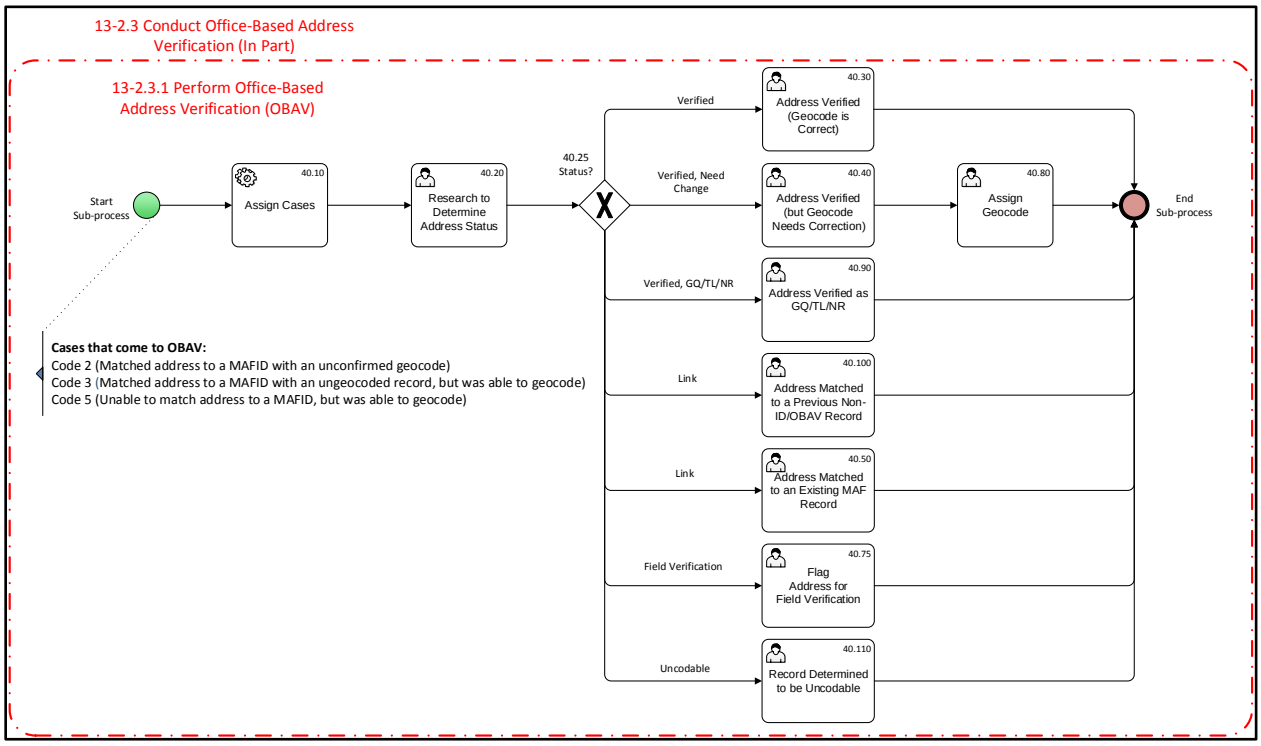

Figure 20: Perform Office-Based Address Verification (OBAV)

As shown in the BPM, there are multiple steps involved in this activity:

- Assign Cases [40.10].
- Research to Determine Address Status [40.20].
- Address Verified (Geocode is Correct) [40.30].
- Address Verified (but Geocode Needs Correction) [40.40].
- Assign Geocode [40.80].
- Flag Address for Field Verification [40.75].

Cases that come to OBAV are (1) MAFIDs with unconfirmed geocodes, (2) MAFIDs with derived geocodes, and (3) unmatched cases with derived geocodes. Clerks research to determine the address existence and location. The outcome for these records will fall under seven different main categories:

- Address and geocode were verified.
- Address was verified but geocode was corrected.
- Address was matched (linked) to an existing Census record.

- Address was determined to be a Group Quarters or Transitory Location.
- Address existence and geocode could not be verified, referred to Field Verification.
- Address could not be verified, and is therefore flagged uncodable (will not be included in Census data tabulation).
- Address was matched (linked) to a Non-ID record that was previously verified.

3.2.3.2 Update Field Verification Workload for NRFU [13-2.3.2]

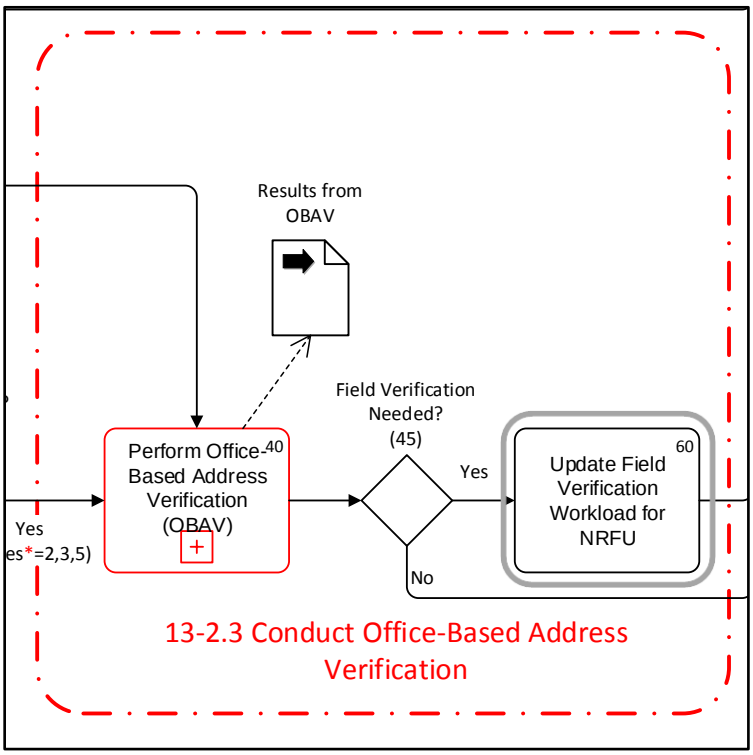

Figure 21: Update Field Verification Workload for NRFU

As shown in the BPM, there one step involved in this activity:

- Update Field Verification Workload for NRFU [60].

Some cases from OBAV may require a field component to verify the location and existence of an address. These cases will make up the Field Verification workload that is sent to the Response Processing Operation (RPO) for inclusion in the Nonresponse Followup (NRFU) Operation workload.

3.2.4 Send Results to Response Processing [13-2.4]

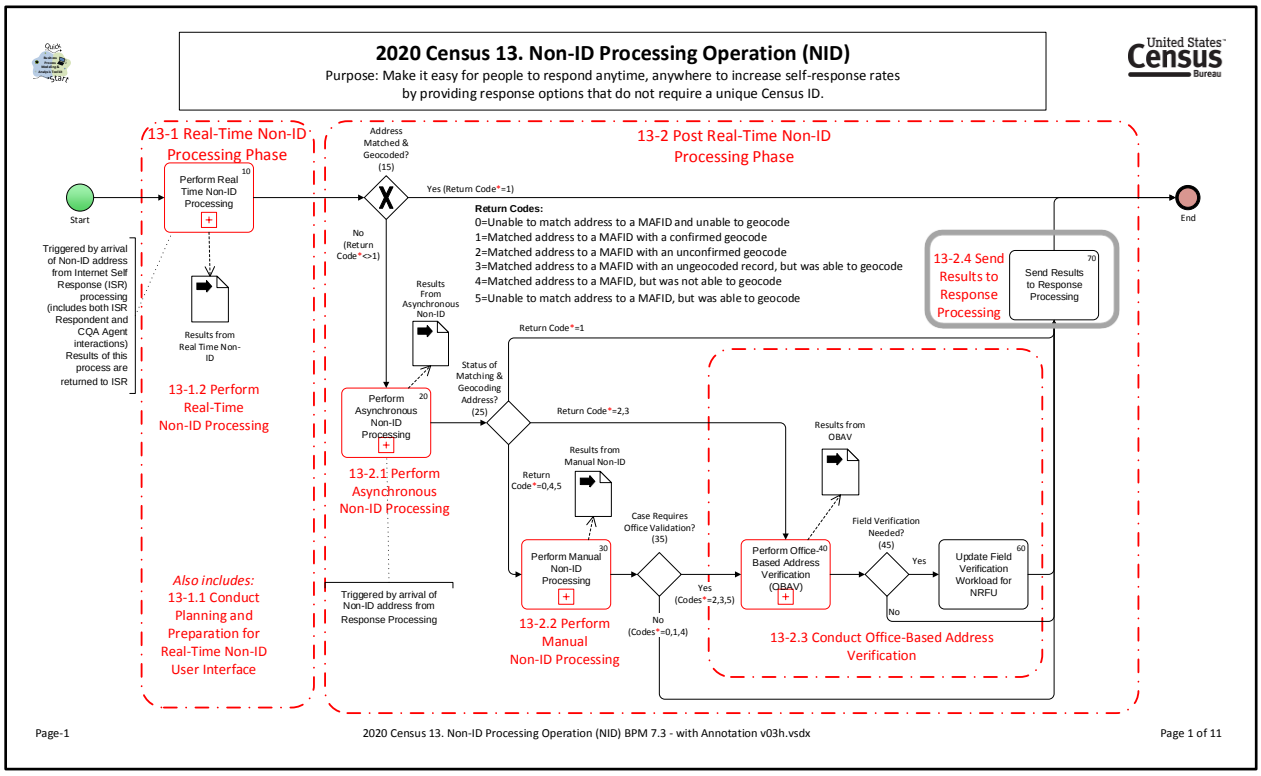

Figure 22: Send Results to Response Processing

There is one step involved in this activity:

- Send Results to Response Processing [70].

Processing results from the NID Post Real-Time Phase are sent to RPO.

4. Cost Factors

4.1 Background

Investment in NID is projected to influence (reduce 🡻) the 2020 Census overall costs in the following ways:

- Increased self-response rates (🡻).
- Improved coverage through self-response (🡻).

4.2 Relevant IDEF0 Mechanisms

While the NID Operation is not a major cost driver for the 2020 Census, the following mechanisms from the IDEF0 Context Diagram represent the resources used to support this operation and comprise part of the 2020 Census cost elements:

Staff:

- HQ Staff
- NPC Staff

Sites:

- HQ
- NPC

Systems:

- MAF/TIGER
- RTNP
- PEARSIS
- MaCS

Other Technology Infrastructure:

- HQ and NPC Office IT Infrastructure to conduct NID Operational work.
- Census Network connectivity to transmit data between operational systems and operational sites.

5. Measures of Success

For the 2020 Census operations, the corresponding Measures of Success will be documented in the operational assessment study plans and final reports. The operational assessment study plan documents the criteria that will be used to define successful completion of the operation. The operational assessment report will provide results on whether the criteria were met.

In general, operational assessments report on planned to actual variances in budget, schedules, and production and training workloads. The corresponding Measures of Success (as documented in the operational assessment study plan) include variances that exceed established thresholds. See *Content Guidelines for the 2020 Census Operational Assessments* for the potential scope of assessment.

Types of success measures include:

- **Process Measures** that indicate how well the process works, typically including measures related to completion dates, rates, and productivity rates.
- **Cost Measures** that drive the cost of the operation and comparisons of actual costs to planned budgets. Costs can include workload as well as different types of resource costs.
- **Measures of the Quality** of the results of the operation, typically including things such as rework rates, error rates, and coverage rates.

See the corresponding operational assessment study plan and report for the 2020 Census Non-ID Processing Operation for details on the measures of success.

Appendix A – Acronyms and Terminology

Table 7 lists the specific acronyms and abbreviations used within this Detailed Operational Plan document.

Table 8 lists a Glossary of Terms used within this Detailed Operational Plan document.

Table 7: Acronyms and Abbreviations List

Acronym	Meaning
ACO	Area Census Office
BCU	Basic Collection Unit
BPM	Business Process Model
BPMN	Business Process Model and Notation
CDL	Census Data Lake
CEF	Census Edited File
CI	Coverage Improvement
CQA	Census Questionnaire Assistance Operation
CRO	Count Review Operation
CUF	Census Unedited File
DLM	Decennial Logistics Management Operation
DPD	Data Products and Dissemination Operation
DRF	Decennial Response File
DSC	Decennial Service Center Operation
EAE	Evaluations and Experiments Operation
ETL	Enumeration at Transitory Locations Operation
FLDI	Field Infrastructure Operation

Acronym	Meaning
FPD	Forms Printing and Design Operation
GDP	Geographic Data Processing
GEOP	Geographic Programs Operation
GQ	Group Quarters Operation
HQ	Headquarters
IA	Island Areas
IAC	Island Areas Censuses Operation
ID	Identification
IDEF0	Integrated Definition, Level 0
IE	Information Exchanges
IOD	Integrated Operations Diagram
ISR	Internet Self Response Operation
ITIN	IT Infrastructure Operation
LQ	Living Quarters
LUCA	Local Update of Census Addresses Operation
MaCS	Matching and Coding Software
MAF	Master Address File
MAFID	Master Address File Identification
MAF/TIGER	Master Address File/ Topologically Integrated Geographic Encoding and Referencing (System)
MDF	Microdata Detail File
MTdb	MAF/TIGER Database

Acronym	Meaning
NID	Non-ID Processing Operation
NPC	National Processing Center
NRFU	Nonresponse Followup Operation
OBAV	Office-Based Address Verification
PDC	Paper Data Capture Operation
PEARSIS	Production Environment for Administrative Records Staging, Integration, and Storage
PM	Program Management Operation
PR	Puerto Rico
QC	Quality Control
RI	Reinterview
RPO	Response Processing Operation
RTNP	Real-Time Non-ID Processing
SR	Self-Response
TEA	Type of Enumeration Area
UE	Update Enumerate Operation
UL	Update Leave Operation
USPS	United States Postal Service

Table 8: Glossary of Terms

Term	Meaning
Asynchronous Processing	Automated processing performed post address collection from respondent.

Term	Meaning
Clerical Processing	Interactive matching performed post address collection from respondent by staff.
Geocoding	The assignment of codes associated with geographic tabulation areas, including state, county, tract, and BCU.
Non-ID Cases	Cases that do not have a preassigned Census ID.
Real-Time Processing	Processing performed during address collection from respondent.

Appendix B – References

Appendix B lists the documents or other resources referenced within this Detailed Operational Plan document.

U.S. Census Bureau (2017), "2020 Census Operational Plan," Version 3.0, October 27, 2017.

U.S. Census Bureau (2016), "Operational Assessment Content Guidelines for the 2018 End-to-End Census Test and the 2020 Census," Draft, May 10, 2016.

Appendix C – Activity Tree for Non-ID Processing Operation (NID)

This appendix presents the Activity Tree for the NID operation. An Activity Tree uses an outline structure to reflect the decomposition of the major operational activities in the operation. Each activity is numbered according to its position in the outline. For example, for the current operation numbered "13", the first activity would be numbered 13-1. Subactivities under this activity would be numbered sequentially, starting again with the number one. For example, the first subactivity under the first activity would be numbered 13-1.1 the second subactivity as 13-1.2. The second activity would be numbered 13-2, and so on.

NID Activity Tree:

- 13-1 Real-Time Non-ID Processing Phase
  - 13-1.1 Conduct Planning and Preparation for Real-Time Non-ID User Interface
  - 13-1.2 Perform Real-Time Non-ID Processing
    - 13-1.2.1 Perform Real-Time Address Standardization
    - 13-1.2.2 Perform Real-Time Non-ID Matching and Geocoding
- 13-2 Post Real-Time Non-ID Processing Phase
  - 13-2.1 Perform Asynchronous Non-ID Processing
    - 13-2.1.1 Receive Consolidated Non-ID Cases
    - 13-2.1.2 Perform Automated Geoprocessing
      - 13-2.1.2.1 Perform Address Standardization
      - 13-2.1.2.2 Perform Automated Matching and Geocoding
    - 13-2.1.3 Perform Unmatched Post Collection
      - 13-2.1.3.1 Perform AdRec Matching
      - 13-2.1.3.2 Perform Post AdRec Automated Matching and Geocoding
  - 13-2.2 Perform Manual Non-ID Processing
    - 13-2.2.1 Perform Manual Address Correction
    - 13-2.2.2 Perform Manual Matching and Geocoding
      - 13-2.2.2.1 Contact the Respondent
    - 13-2.2.3 Perform Non-ID Quality Control
  - 13-2.3 Conduct Office-Based Address Verification
    - 13-2.3.1 Perform Office-Based Address Verification (OBAV)
    - 13-2.3.2 Update Field Verification Workload for NRFU
  - 13-2.4 Send Results to Response Processing